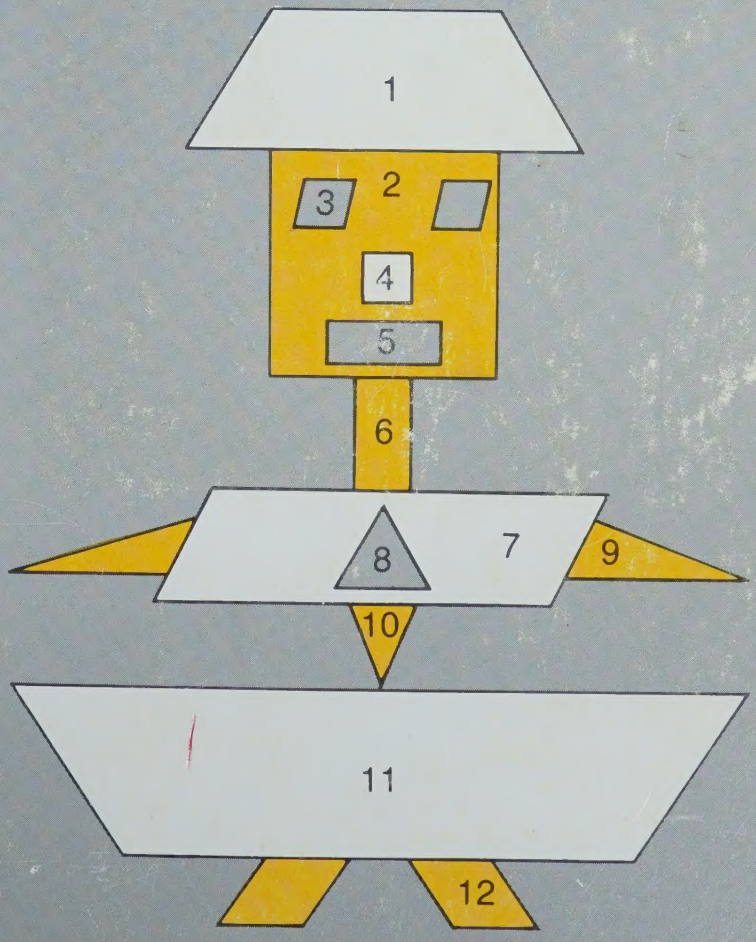
starting points in mathematics 5

blackline masters

Name the numbered shapes.



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Blackline Masters for

starting points in mathematics

Level 5

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To the Teacher

This book is designed for use with *Starting Points in Mathematics 5 Revised* and provides the following.

Contents of Blackline Masters	T2–T3
Teacher's Notes	T4–T6
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Blackline Masters	1–96

Masters 1 to 64 provide reteaching lessons for key lessons in the student text. Masters 65 to 80 provide problem-solving extensions for the problem-solving lessons in the student text. Masters 81 to 96 provide enrichment lessons for each unit. The Contents on page T2 and T3 suggest the corresponding student text page with which each reteaching and problem-solving master may be used. The student text page also appears at the top of each of these masters. The corresponding unit suggested for each enrichment master is identified on the Contents page and again on the top of the master. It must be kept in mind, however, that the most appropriate time for use of each master is best determined by the teacher for his or her particular class.

On the reteaching masters, one or more answers are provided to allow students to determine whether they are proceeding correctly. For any exercise with a domino beside it, students can find a corresponding domino with the answer at the bottom of the page.

Before assigning independent work, the teacher should make certain that the directions are understood by the students. When a page has been completed, the teacher and the students should discuss and correct the responses together. Better learning will occur if the correction can take place as soon as possible after the page is completed.

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Teacher's Notes

1. Before your students begin the last section on this page, show them how to solve a simple example of this type.

2. If your students are having difficulty getting started connecting the dots, give them the starting number in the drawing.

3. Before assigning this page, review which digit should be checked when rounding to the nearest ten and nearest hundred.

4. You can use the map to ask additional questions involving rounding, total distances travelled, and shortest routes from one location to another.

5. Explain to your students how to decode these answers before assigning this page.

6. Tell your students that the "special sum" for the last three exercises should be the same number.

7. If your students are having difficulty following the clues along the path, do the first few steps with them.

8. You might require your students to do all the problems in the tick-tack-toe grid rather than stopping when they have won the game.

9. You might require your students to check their answers using addition.

10. Be sure your students understand that in some exercises they round to the nearest thousand and in other exercises they round to the nearest ten-thousand.

11. The purpose of this page is to provide drill in basic multiplication facts through 9.

12. The last section on this page demonstrates that the way factors are grouped affects the ease of multiplying.

13. If your students are unfamiliar with cross-number puzzles, explain to them where to place their answers.

14. This page provides drill in multiplication by multiples of ten, hundred, and thousand.

15. This page provides drill in multiplication of two-digit numbers.

16. In the final section on this page, stress to your students that they should use their estimates to choose the exact products. They should not actually do the multiplication.

17. There are many additional questions you can ask using the two graphs on this page.

18. Emphasize that in an ordered pair the "over" number is first and the "up" number is second.

19. If you wish, you can have your students write the multiplication fact they used next to each division problem.

20. Be sure your students understand they are to use only the remainders to find the correct path through the maze.

21. You might require your students to check their answers using multiplication.

22. Point out to your students that exercise 6 should be thought of as having a remainder of 0.

23. Remind your students to work carefully on these exercises, since one wrong answer will affect all remaining answers.

24. Make sure your students understand that they are to check the exercises using multiplication. They are not to do the division unless they find a wrong answer.

25. This page teaches your students how to compute averages.

26. You may wish to have the students write each decimal number in fraction form.

27. You may wish to have the students write each decimal number in fraction form.

28. Emphasize to your students that they should align decimal points before comparing digits. Also, be sure they understand that they must always compare digits from left to right.

29. It may be helpful to provide additional examples when assigning this page.

30. Emphasize the importance of lining up the decimal points.

31. Emphasize the similarity between subtracting whole numbers and subtracting decimals.

32. This page provides practice in converting from one metric measurement of length to another.

33. As an additional activity, students can measure and compute the perimeter of various classroom objects.

34. Point out that there is more than one answer to each of exercises 7, 8, and 9.

35. Your students should be able to complete the product wheels by doing the multiplication mentally, rather than writing the problems out.

36. Emphasize that students should not multiply to find the exact products for exercises 7 to 12.

37 Emphasize the importance of first estimating the product to determine where to place the decimal point.

38 Make sure that the students are aware of the patterns when multiplying by 100, 10, 0.1, and 0.01.

39 Use a diagram to show that tenths × tenths = hundredths.

40 Discuss the three steps that are necessary to solve problem 9.

41 Point out the two scales on a protractor and make sure that the students are using the correct scale.

42 Students who are having difficulty with the concept of symmetry should cut out the shapes and fold them to see if both sides match.

43 You may wish to point out the lines of symmetry in the rhombus, rectangle, and square.

44 The purpose of this page is to provide practice in dividing by a one-digit number.

45 Tell your students to check their division carefully since some of the answers in the tick-tack-toe grid are similar to each other.

46 This page provides practice dividing by multiples of ten.

47 Make sure that your students know how to place their answers in the puzzle.

48 Emphasize to your students that they should use their estimates to choose the exact answers. They should not do the actual division.

49 As a preliminary activity, students should build figures with cubes to understand the concept of volume.

50 As an additional activity, students can estimate the mass of classroom and household objects.

51 Students can use estimation to determine where to place the decimal point.

52 Students should know, without solving the exercise, when a quotient will be less than one.

53 Tell students to continue adding zeros in exercises 1 to 8 until there is no remainder.

54 You may wish to have your students work through each of the exercises on the test paper.

55 Make sure students understand the directions to the fraction word game.

56 Emphasize that each of the three paths connects different equivalent fractions.

57 Ask students to tell what they must multiply or divide by in order to find each missing term.

58 Make sure students know how to find a common denominator before assigning this page.

59 Draw pictures for exercises 1 to 4 for students who are having difficulty.

60 Many students will have difficulty in subtracting fractions when renaming is necessary.

61 As an intermediate step in the matching exercise, have the students write each fraction as an equivalent fraction with a denominator of 10 or 100.

62 To help students visualize slides, flips, and turns, provide cardboard figures for students to manipulate on graph paper.

63 Have students tell what they are multiplying by to find each equivalent ratio.

64 Have students name the number they are multiplying or dividing by to find each missing term.

65 After assigning the page, you may wish to have some students find the information and report to the class.

66 Let students work on this page in their spare time. Some will find it difficult. Suggest that they cover up every row except the one they are working on.

67 Be sure students understand that they are to choose one fact from the three at the right to complete each problem. You may wish to have students make up similar problems for others to solve.

68 Start exercise 1 with the class. Suggest that they make a list of possibilities. For exercise 3 and 4 make sure they understand the form in which to leave the answers. If calculators are available, you may wish to have students use them.

69 You may wish to suggest that students make a tally chart of the marks before making the bar graph. Exercise 5 may cause some difficulty; the answer, 20, is deduced from the fact that the marks are in increments of 5.

70 Discuss the examples. Pay particular attention to the remainder in fraction form.

71 This classic problem is the same as asking for the number of diagonals in a polygon plus the number of sides. Let students start the page with no prior discussion; many will recognize the technique to use.

72 When students have completed this page, many will be anxious to try other shapes. Tangram designs make attractive bulletin-board displays.

73 Point out that some problems ask only for an equation; some require solutions to the equation.

74 Probably some students or members of their families collect stamps. Be sure students understand the term *glassine*. If possible, ask students to bring in samples of hinges and glassines.

75 Every equation on this page is to be solved.

76 Let students begin this page with no discussion. Problem 4 cannot be solved; there is not enough information.

77 There are three solutions to this problem. Allow students to work on this for several days. Once they understand the short cut, they will be able to finish quickly.

78 Be sure students can read the chart. The actual problems should not be difficult for most students.

79 Allow students to work on this page for several days. For those who finish quickly, suggest they use six squares.

80 Let students start this page on their own. If they have difficulty, work with them one-to-one. Have extra centimetre grid paper available.

81 You can extend the lesson by having students write the numbers from 10 to 20 in base-two.

82 Before students begin, do a sample problem with them so they see the logic involved in solving the problems.

83 Remind students to work carefully as one wrong answer will affect the rest of the answers in the triangle.

84 This page requires students to follow directions carefully using a street map. If students are getting confused, have them draw the paths on the map.

85 This page can be solved using division skills and logic.

86 Be sure students understand that it is sometimes necessary to subtract to find some of the numbers in the circles.

87 Before assigning the page, review the terms *perimeter* and *area*.

88 If students are finding it difficult to get started, have them divide the robot into rectangular shapes. Then they can calculate the area of the smaller rectangles and add to find the total area.

89 Remind students to work carefully, as one wrong answer will affect the entire line of answers.

90 Be sure students know how to fill in a cross-word puzzle.

91 This page requires logic and reasoning. Students must often work backward through the problems to determine the missing digits.

92 Complete this page along with students to be certain they are taping the flaps to the correct edges.

93 Before students begin, be certain they know how to read the flow chart. Discuss with the students why the answers in column Z are the same for groups of factors.

94 You can extend the lesson by having your students do their own probability experiments.

95 Before assigning this page, make a shape out of a large rubber band and some pegs. Then show students how the shape can be stretched into a different shape without connecting or disconnecting any points.

96 Be sure students understand that the scale is 1 cm to 4 m. Also, clarify that the length of a room is longer than the width.

NAME

SPM 8 Masters
With pages 4-5

1

Numbers to 999 999

Study the chart.

Standard number	Expanded form	thousands					
		h	t	o	h	t	o
304	300 + 4				3	0	4
480	400 + 80				4	8	0
2845	2000 + 800 + 40 + 5			2	8	4	5
13 063	10 000 + 3000 + 60 + 3		1	3	0	6	3
230 030	200 000 + 30 000 + 30	2	3	0	0	3	0

What does each 6 mean?

1. 694 6 hundreds
2. 6704 6 thousands
3. 5436 6 ones
4. 65 045 6 ten thousands
5. 16 743 6 thousands
6. 635 481 6 hundred thousands

Write each in expanded form.

7. 435 400 + 30 + 5
8. 308 300 + 8
9. 3490 3000 + 400 + 90
10. 4000 4000
11. 75 000 70 000 + 5000 + 800
12. 67 008 60 000 + 7000 + 8

Write each in standard form.

13. 7 hundred forty 740
14. 6 thousand 3 hundred 5 6305
15. 3 thousand 90 3090
16. 12 thousand 9 hundred twenty 12 920
17. 340 thousand 45 340 045
18. 468 thousand seven 468 007

Create a Number.

Use each digit below only once for each question.

3	0	8	4	0	2

19. What is the greatest number you can make? 843 200
20. What is the smallest number you can make? 2348

740 6 hundreds 400 + 30 + 5

NAME

SPM 5 Masters
With pages 8-9

2

Comparing and Ordering Numbers

Which is greater, 435 798 or 437 231?

Compare each digit.

thousands					
h	t	o	h	t	o
4	3	5	7	9	8
4	3	7	2	3	1

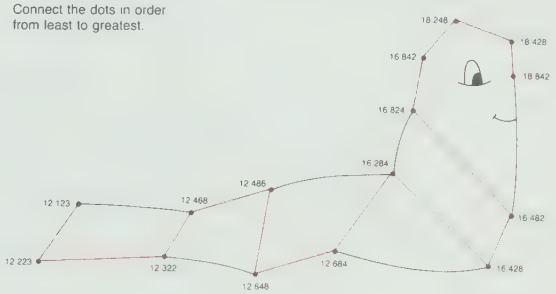
same
same

7 thousands > 5 thousands
so, 437 231 > 435 798

Use >, <, or = to make true statements.

1. 47 859 < 47 869
2. 56 358 > 54 358
3. 24 938 < 24 948
4. 16 342 < 16 432
5. 49 323 > 48 324
6. 354 268 = 354 268
7. 235 438 < 235 483
8. 459 386 > 449 386

Connect the dots in order from least to greatest.



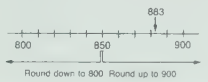
NAME

SPM 5 Masters
With pages 10-11

3

Rounding to the Nearest 10, 100

Round 883 to the nearest hundred.



When rounding to a certain place value, check the digit to its right
Round up if the digit is 5 or greater
Round down if the digit is less than 5

883 rounded to the nearest 100 is 900.

Round to the nearest ten and to the nearest hundred.

		ten	hundred
1.	354	350	400
2.	268	270	300
3.	192	190	200
4.	935	940	900
5.	3288	3290	3300
6.	5554	5550	5600
7.	7726	7730	7700
8.	4999	5000	5000

Tick-Tack-Toe

Round the numbers to the nearest ten. Then mark the row in which all the answers are the same.

828	815	821
~~830~~ 820	820	820
822	~~825~~	815
820	~~830~~	820
818	825	~~834~~
820	830	~~830~~

3290, 3300 . 350, 400

NAME

SPM 5 Masters
With pages 10-11

4

Rounding to the Nearest 1000, 10 000

Study the chart.

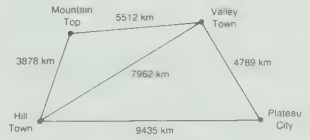
Number	Round to this place value.	What is the digit to its right?	Is the digit 5 or greater than 5?	Do you round up or down?	Rounded number
82 567	thousand	5	yes	up	83 000
82 567	ten thousand	2	no	down	80 000
235 468	thousand	4	no	down	235 000
235 468	ten thousand	5	yes	up	240 000

Round to the nearest:

		thousand	ten thousand
1.	34 525	35 000	30 000
2.	78 477	78 000	80 000
3.	89 648	90 000	90 000
4.	895 345	895 000	900 000
5.	421 896	422 000	400 000

Rounding Distances

Round the numbers on the map to thousands. Then complete the sentences below.



6. It is about 4000 km from Hill Town to Mountain Top
7. It is about 5000 km from Valley Town to Plateau City
8. It is about 6000 km from Mountain Top to Valley Town
9. It is about 8000 km from Hill Town to Valley Town
10. It is about 9000 km from Hill Town to Plateau City

Hill Town, Mountain Top . 35 000, 30 000 895 000, 900 000

NAME

SPM 5 Masters
With pages 18-19

5

Adding Two- and Three-Digit Numbers

Add 27 and 35.

Add the ones.

$$\begin{array}{r} {\scriptstyle 1}\\ 37\\ +\ 35\\ \hline 2 \end{array}$$

Regroup 12 ones as 1 ten 2 ones

Add the tens.

$$\begin{array}{r} {\scriptstyle 1}\\ 37\\ +\ 35\\ \hline 72 \end{array}$$

Add.

1. 43 + 54 = 97
2. 33 + 23 = 56
3. 46 + 32 = 78
4. 24 + 72 = 96
5. 18 + 81 = 99
6. 18 + 42 = 60
7. 35 + 46 = 81
8. 48 + 27 = 75
9. 24 + 59 = 83
10. 73 + 19 = 92
11. 23 + 42 + 34 = 99
12. 12 + 51 + 22 = 85
13. 32 + 47 + 18 = 97
14. 15 + 29 + 40 = 84
15. 12 + 35 + 43 = 90

16. 62 + 35 = 97
17. 24 + 38 = 62
18. 49 + 18 = 67
19. 14 + 13 + 12 = 39
20. 23 + 37 + 19 = 79

Decoding Time

Here is a code.

30	44	48	64	73	97
M	O	E	N	T	D

Add. What is the name of the city?

29 + 19 = 48	63 + 34 = 97	14 + 16 = 30	29 + 15 = 44	45 + 19 = 64	25 + 48 = 73	23 + 21 = 44	38 + 26 = 64
E	D	M	O	N	T	O	N

99 · 97 · 97

NAME

SPM 5 Masters
With pages 20-21

6

Addition with Regrouping

On Saturday the movie theatre sold 789 tickets. On Sunday 534 tickets were sold. How many tickets were sold on the weekend?

Add the ones.

$$\begin{array}{r} {\scriptstyle 1}\\ 789\\ +\ 534\\ \hline 3 \end{array}$$

Regroup 13 ones as 1 ten 3 ones.

Add the tens.

$$\begin{array}{r} {\scriptstyle 11}\\ 789\\ +\ 534\\ \hline 23 \end{array}$$

Regroup 12 tens as 1 hundred 2 tens.

Add the hundreds.

$$\begin{array}{r} {\scriptstyle 11}\\ 789\\ +\ 534\\ \hline 1323 \end{array}$$

Regroup 13 hundreds as 1 thousand 3 hundreds.

1323 tickets were sold on the weekend.

Add.

1. 156 + 237 = 393
2. 384 + 192 = 576
3. 564 + 243 = 807
4. 569 + 213 = 782
5. 732 + 186 = 918
6. 254 + 238 = 492
7. 468 + 512 = 980
8. 726 + 194 = 920
9. 334 + 487 = 821
10. 148 + 256 = 404

Solve.

11. One Saturday the snack bar at the movie theatre sold 156 boxes of popcorn at the matinée. 215 boxes were sold at the evening show. How many boxes of popcorn were sold altogether? 371

Special Sum

Add across and down. Then find the "special sum" for the corner box.

12.

272	326	598
139	234	373
411	560	971

13.

125	387	512
186	273	459
311	660	971

14.

151	452	603
174	194	368
325	646	971

371 · 492 · 393

NAME

SPM 5 Masters
With page 27

7

Addition and Subtraction

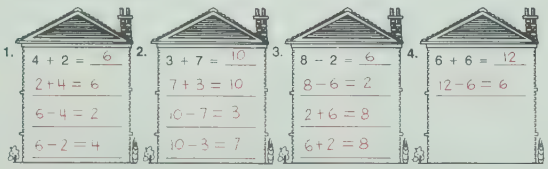
Related Numbers

2 3 5

Family of Facts

2 + 3 = 5
3 + 2 = 5
5 − 2 = 3
5 − 3 = 2

Write the complete family.

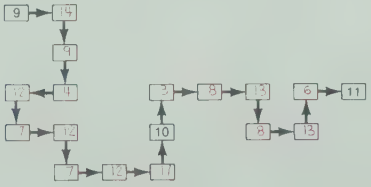


Add or subtract.

5. 6 + 5 = 11
6. 8 − 3 = 5
7. 4 + 9 = 13
8. 11 − 4 = 7
9. 5 + 8 = 13
10. 18 − 9 = 9
11. 13 − 7 = 6
12. 4 + 9 = 13
13. 17 − 8 = 9
14. 15 − 7 = 8
15. 8 + 9 = 17
16. 7 + 6 = 13

Follow the path. Use the clues to help you follow the path.

Clues
- Add 5
- Subtract 5
- Add 8
- Subtract 7



6, 2 + 4 = 6, 6 − 4 = 2, 6 − 2 = 4 · 9 · 11

NAME

SPM 5 Masters
With pages 29-30

8

Subtracting Two- and Three-Digit Numbers

Subtract 293 from 482.

Regroup 8 tens 2 ones as 7 tens 12 ones. Subtract the ones.

$$\begin{array}{r} {\scriptstyle 7\ 12}\\ 4\,\not{8}\,2\\ -\ 293\\ \hline \end{array}$$

Regroup 4 hundreds 7 tens as 3 hundreds 17 tens. Subtract the tens.

$$\begin{array}{r} {\scriptstyle 17}\\ {\scriptstyle 3\ 7\ 12}\\ 4\,\not{8}\,\not{2}\\ -\ 293\\ \hline 89 \end{array}$$

Subtract the hundreds.

$$\begin{array}{r} {\scriptstyle 17}\\ {\scriptstyle 3\ 7\ 12}\\ 4\,\not{8}\,\not{2}\\ -\ 293\\ \hline 189 \end{array}$$

Subtract.

1. 89 − 73 = 16
2. 78 − 35 = 43
3. 58 − 24 = 34
4. 93 − 27 = 66
5. 63 − 36 = 27
6. 65 − 28 = 37
7. 93 − 67 = 26
8. 465 − 253 = 212
9. 937 − 214 = 723
10. 738 − 217 = 521
11. 394 − 285 = 109
12. 428 − 319 = 109
13. 634 − 459 = 175
14. 342 − 258 = 84
15. 873 − 385 = 488

Tick-Tack-Toe

Do the problems in any order you wish. You win when you have 3 answers that are the same in a row.

95 − 59 = 36	83 − 57 = 26	74 − 38 = 36
849 − 243 = 606	796 − 191 = 605	935 − 330 = 605
754 − 318 = 436	561 − 125 = 436	835 − 399 = 436

109 · 37 · 16

NAME

SPM 5 Masters
With pages 32-33

9

Subtraction, Regrouping with Zeros

Subtract 256 from 503.

Regroup 5 hundreds 0 tens as 4 hundreds 10 tens. Then, regroup 10 tens 3 ones as 9 tens 13 ones. Subtract the ones.

9 13
4 10
5 0 3
− 2 5 6
7

Subtract the tens.

9 13
4 10
5 0 3
− 2 5 6
4 7

Subtract the hundreds.

9 13
4 10
5 0 3
− 2 5 6
2 4 7

Subtract.

1. 80 − 36 = 44
2. 90 − 42 = 48
3. 60 − 35 = 25
4. 40 − 23 = 17
5. 600 − 420 = 180
6. 705 − 230 = 475
7. 808 − 164 = 644
8. 409 − 235 = 174
9. 804 − 212 = 592
10. 600 − 338 = 262
11. 308 − 129 = 179
12. 500 − 254 = 246

Mystery Number

Subtract. Cross out your answer in the code strip. The remaining answer is the mystery number.

13. 80 − 14 = 66
14. 600 − 420 = 180
15. 806 − 335 = 471
16. 400 − 236 = 164
17. 640 − 358 = 282

37	~~66~~	~~164~~	~~180~~	~~282~~	~~471~~

592 · 44 · 66

NAME

SPM 5 Masters
With pages 36-37

10

Estimating Sums and Differences

Estimate the sum to the nearest thousand.

4819 → 4800
+ 4295 → + 4300
9100

Estimate the difference to the nearest ten thousand.

32 987 → 30 000
− 15 203 → − 20 000
10 000

Round to the nearest thousand. Estimate the sum or difference. Then find the exact answer.

1. 4854 → 5000 + 2483 → + 2000 = 7337 / 7000
2. 7435 → 7000 − 3241 → − 3000 = 4194 / 4000
3. 3584 → 4000 + 2338 → + 2000 = 5922 / 6000

Round to the nearest ten thousand. Estimate the sum or difference. Then find the exact answer.

4. 16 534 → 20 000 + 12 362 → + 10 000 = 28 896 / 30 000
5. 28 349 → 30 000 − 19 837 → − 20 000 = 8 512 / 10 000
6. 43 562 → 40 000 + 22 435 → + 20 000 = 65 997 / 60 000
7. 38 345 → 40 000 − 15 732 → − 20 000 = 22 613 / 20 000
8. 17 216 → 20 000 + 11 484 → + 10 000 = 28 700 / 30 000
9. 43 954 → 40 000 − 28 323 → − 30 000 = 15 631 / 10 000

Decoding Time

Here is a code.

4000	4909	5000	5389	6000
B	E	C	Q	U

Round each number to the nearest thousand. Estimate the sum or difference. Then find the exact answer. What is the name of the city?

3875 → 4000 + 1514 → + 2000 = 5389 / 6000		7443 → 7000 − 2534 → − 3000 = 4909 / 4000		8354 → 8000 − 3445 → − 3000 = 4909 / 5000	
Q	U	E	B	E	C

28 896, 20 000 · 10 000 = 30 000 · 22 613, 40 000 · 20 000 = 20 000 · 7337, 5000 + 2000 = 7000

NAME

SPM 5 Masters
With pages 42-43

11

Multiplication, Basic Facts

There are 9 players on each baseball team. If there are 8 teams in the league, how many players are there in all?

We can add.
9 + 9 + 9 + 9 + 9 + 9 + 9 + 9 = 72

We can multiply.
9 × 8 = 72

There are 72 players in the league.

Fill in the chart. Be careful! The factors on the side are out of order.

	X	0	1	2	3	4	5	6	7	8	9
1.	5	0	5	10	15	20	25	30	35	40	45
2.	2	0	2	4	6	8	10	12	14	16	18
3.	8	0	8	16	24	32	40	48	56	64	72
4.	0	0	0	0	0	0	0	0	0	0	0
5.	4	0	4	8	12	16	20	24	28	32	36
6.	7	0	7	14	21	28	35	42	49	56	63
7.	3	0	3	6	9	12	15	18	21	24	27
8.	9	0	9	18	27	36	45	54	63	72	81
9.	1	0	1	2	3	4	5	6	7	8	9
10.	6	0	6	12	18	24	30	36	42	48	54

Solve.

11. Last season Kevin's baseball team averaged 5 runs in a game. If they played 8 games, how many runs did they score all season? 40
12. There are 9 innings in a baseball game. A team gets 3 outs in every inning. How many outs does a team get in an entire game? 27

0, 7, 14, 21, 28, 35, 42, 49, 56, 63 · 0, 5, 10, 15, 20, 25, 30, 35, 40, 45

NAME

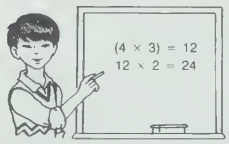
SPM 8 Masters
With pages 42-43

12

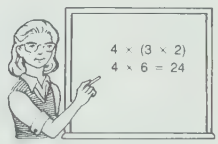
More than Two Factors

Multiply 4 × 3 × 2.

Frank groups the factors this way:



Anna groups the factors this way:



Either way, the answer is 24.

Multiply.

1. 5 × (3 × 2) = 30
2. (2 × 4) × 3 = 24
3. (1 × 2) × 3 = 6
4. (3 × 3) × 2 = 18
5. (1 × 9) × 8 = 72
6. (7 × 7) × 0 = 49
7. 7 × (3 × 1) = 21
8. (4 × 9) × 0 = 0
9. 8 × (3 × 3) = 72
10. 8 × (3 × 2) = 48
11. 9 × (2 × 4) = 72
12. 6 × (4 × 1) = 24
13. 8 × (4 × 2) = 64
14. (2 × 2) × 9 = 36
15. (9 × 1) × 9 = 81
16. 6 × (2 × 3) = 36
17. (8 × 1) × 8 = 64
18. 3 × (4 × 2) = 18

Write the products for each column. Time yourself. Which column can you do faster?

4 × (3 × 2) = 24	(4 × 3) × 2 = 24
(2 × 3) × 8 = 48	2 × (3 × 8) = 48
(4 × 2) × 7 = 56	4 × (2 × 7) = 56
(2 × 3) × 6 = 36	2 × (3 × 6) = 36
9 × (2 × 2) = 36	(9 × 2) × 2 = 36
6 × (3 × 3) = 54	(6 × 3) × 3 = 54
8 × (2 × 2) = 32	(8 × 2) × 2 = 32
(2 × 5) × 8 = 80	2 × (5 × 8) = 80

48 · 30

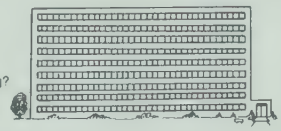
NAME

SPM 5 Masters
With pages 46-47

13

Multiplying by a One-Digit Number

The office building has 9 floors.
There are 36 windows on each floor.
How many windows are in the office building?



Multiply 36 × 9.

Multiply the ones.	Multiply the tens.	Add
36 × 9 54 9 × 6 ones = 54 ones	36 × 9 54 270 9 × 3 tens = 27 tens	36 × 9 54 + 270 324

Multiply.

1. 35 × 5 = 175
2. 78 × 3 = 234
3. 43 × 7 = 301
4. 62 × 8 = 496
5. 233 × 3 = 699
6. 342 × 2 = 684
7. 316 × 4 = 1264
8. 721 × 6 = 4326
9. 385 × 8 = 3080
10. 382 × 7 = 2674

Complete the cross-number puzzle.

Across
1. 47 × 2 = 94
2. 385 × 7 = 2695
4. 1083 × 4 = 4332
5. 137 × 6 = 822
6. 143 × 5 = 715
7. 65 × 7 = 455

Down
1. 469 × 2 = 938
2. 475 × 5 = 2375
3. 207 × 3 = 621
4. 106 × 4 = 424

684 175

NAME

SPM 5 Masters
With pages 50-51

14

Multiplying by Multiples of 10, 100, and 1000

Study the pattern.

40 × 2 80	40 × 20 800	40 × 200 8000	40 × 2000 80000

When multiplying by multiples of 10, 100, or 1000, write the appropriate number of zeros. Then multiply by the remaining digits.

Complete the pattern.

1. 70 × 3 = 210
2. 70 × 30 = 2100
3. 70 × 300 = 21000
4. 70 × 3000 = 210 000

Multiply.

5. 43 × 10 = 430
6. 28 × 200 = 5600
7. 54 × 200 = 10 800
8. 140 × 4000 = 560 000
9. 20 × 60 = 1200
10. 43 × 30 = 1290
11. 340 × 20 = 6800
12. 104 × 200 = 20 800
13. 38 × 4000 = 152 000
14. 129 × 3000 = 387 000

Decoding Time

Here is a code.

960	1200	1320	1350	1600	48 000
N	I	W	P	G	E

Multiply. What is the name of the city?

44 × 30 1320	20 × 60 1200	24 × 40 960	32 × 30 960	40 × 30 1200	45 × 30 1350	160 × 300 48 000	80 × 20 1600
W	I	N	N	I	P	E	G

20 800 430 210

NAME

SPM 5 Masters
With pages 54-55

15

Multiplying by a Two-Digit Number

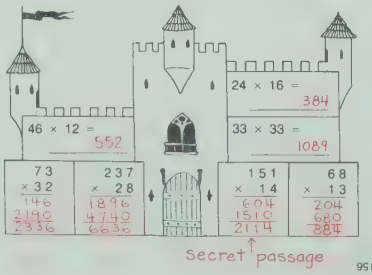
Multiply 15 and 32.

Multiply 15 and 2 ones.	Multiply 15 and 3 tens.	Add.
15 × 32 30 15 × 2 ones = 30 ones	15 × 32 30 450 15 × 3 tens = 45 tens	15 × 32 30 + 450 480

Multiply.

1. 12 × 13 = 156
2. 14 × 12 = 168
3. 44 × 33 = 1452
4. 32 × 24 = 768
5. 137 × 41 = 5617
6. 128 × 18 = 2304
7. 233 × 37 = 8621
8. 368 × 46 = 16928

The castle's secret passage is at the box whose product is 2114.
Where is the secret passage?



5617 156

NAME

SPM 5 Masters
With page 60

16

Estimating the Product

Matt is ordering electronic games for his toy store. There are 144 games in each case. He is ordering 25 cases. About how many electronic games is he ordering?

Estimate the product.

Round each number to the highest place value.
144 → 100
× 25 → × 30
3000

Matt is ordering about 3000 games.

Round and multiply to estimate the product. Then, find the exact product.

1. 24 → 20, 16 → 20; × = 400; 144 + 240 = 384
2. 14 → 10, 35 → 40; × = 400; 70 + 420 = 490
3. 84 → 80, 19 → 20; × = 1600; 756 + 840 = 1596
4. 832 → 800, × 45 → × 50; × = 40 000; 4160 + 33 280 = 37 440
5. 775 → 800, × 24 → × 20; × = 16 000; 3100 + 15 500 = 18 600
6. 283 → 300, × 438 → × 400; × = 120 000; 2264 + 8490 + 113 200 = 123 954

Choose the Exact Product

Round each number and multiply to estimate the product. Use your estimate to choose the exact product. It is not necessary to compute the exact product.

7. 32 → 30, × 28 → × 30; 900
   A. 896 (circled)
   B. 8960
   C. 89 600
8. 98 → 100, × 12 → × 10; 1000
   A. 576
   B. 676
   C. 1176 (circled)
9. 382 → 400, × 24 → × 20; 8000
   A. 916
   B. 9168 (circled)
   C. 91 680
10. 489 → 500, × 214 → × 200; 100 000
    A. 104 646 (circled)
    B. 1 004 646
    C. 1 046 466

37 440, 800 × 50 = 40 000 384, 20 × 20 = 400

NAME

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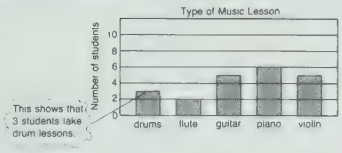
Reading Graphs

Jacques took a survey of fifth grade students who take music lessons. He drew a bar graph to show his information.



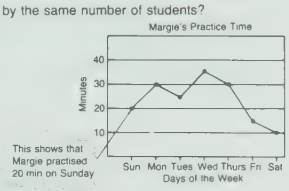
Use the graph to answer the questions.

1. How many students take flute lessons? 2
2. How many students take guitar lessons? 5
3. Which instrument is studied by the least number of students? flute
4. Which instrument is studied by the most students? piano

   How many students study it? 6
5. Which two instruments are studied by the same number of students?

   guitar, violin

Margie drew a line graph showing how much time she spent practising piano one week.



Use the graph to answer the questions.

6. How long did Margie practise on Tuesday? 25 min
7. How long did Margie practise on Friday? 15 min
8. On which two days did Margie practise 30 min? Monday and Thursday
9. On which day did Margie practise the least? Saturday

   How long did she practise on that day? 10 min
10. On which day did Margie practise the most? Wednesday

    How long did she practise on that day? 35 min

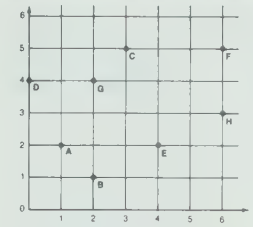
piano 25 minutes 2

NAME

SPM 5 Masters With pages 72-73 18

Ordered Pairs of Numbers and Points on a Grid

Each point on this grid can be matched with an ordered pair of numbers.



To reach point A from 0, count "over" 1 and "up" 2. Point A matches the ordered pair (1,2).

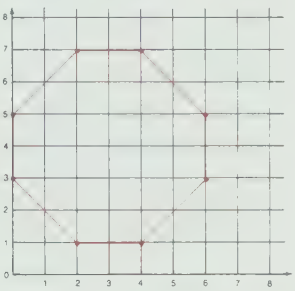
To reach point B from 0, count "over" 2 and "up" 1. Point B matches the ordered pair (2,1).

Give the ordered pair of numbers that matches each point.

1. point C (3,5)
2. point E (4,2)
3. point H (5,3)
4. point D (0,4)
5. point G (2,4)
6. point F (6,5)

Plot each point on the grid. Connect the points in order as you draw them. What shape have you made?

(2,1)
(4,1)
(6,3)
(6,5)
(4,7)
(2,7)
(0,5)
(0,3)
(2,1)



(0,4) (3,5)

NAME

SPM 5 Masters With pages 80-81 19

Division, Basic Facts

Divide 42 by 7.

Think.	Write.
$7\overline{)42}$ $7 \times ? = 42$ $7 \times 6 = 42$	$\begin{array}{r} 6 \\ 7\overline{)42} \end{array}$

Find the quotient. Write the multiplication fact you use.

1. $4\overline{)12}$ $\begin{array}{r} 3 \\ \times 3 \\ \hline 12 \end{array}$ $\begin{array}{r} 4 \\ \times 3 \\ \hline 12 \end{array}$
2. $3\overline{)9}$ $\begin{array}{r} 3 \\ \times 3 \\ \hline 9 \end{array}$
3. $5\overline{)15}$ $\begin{array}{r} 3 \\ \times 5 \\ \hline 15 \end{array}$ $\begin{array}{r} 5 \\ \times 3 \\ \hline 15 \end{array}$
4. $21 \div 7 =$ 3 $\begin{array}{r} 7 \\ \times 3 \\ \hline 21 \end{array}$
5. $36 \div 4 =$ 9 $\begin{array}{r} 4 \\ \times 9 \\ \hline 36 \end{array}$
6. $72 \div 9 =$ 8 $\begin{array}{r} 9 \\ \times 8 \\ \hline 72 \end{array}$

Divide.

7. $2\overline{)18}$ $\begin{array}{r} 9 \\ \hline 18 \end{array}$
8. $8\overline{)16}$ $\begin{array}{r} 2 \\ \hline 16 \end{array}$
9. $6\overline{)30}$ $\begin{array}{r} 5 \\ \hline 30 \end{array}$
10. $2\overline{)14}$ $\begin{array}{r} 7 \\ \hline 14 \end{array}$
11. $8\overline{)24}$ $\begin{array}{r} 3 \\ \hline 24 \end{array}$
12. $9\overline{)54}$ $\begin{array}{r} 6 \\ \hline 54 \end{array}$
13. $6\overline{)36}$ $\begin{array}{r} 6 \\ \hline 36 \end{array}$
14. $9\overline{)63}$ $\begin{array}{r} 7 \\ \hline 63 \end{array}$
15. $6\overline{)18}$ $\begin{array}{r} 3 \\ \hline 18 \end{array}$
16. $7\overline{)28}$ $\begin{array}{r} 4 \\ \hline 28 \end{array}$
17. $7\overline{)63}$ $\begin{array}{r} 9 \\ \hline 63 \end{array}$
18. $4\overline{)32}$ $\begin{array}{r} 8 \\ \hline 32 \end{array}$
19. $56 \div 7 =$ 8
20. $24 \div 4 =$ 6
21. $27 \div 9 =$ 3
22. $36 \div 4 =$ 9
23. $48 \div 8 =$ 6
24. $81 \div 9 =$ 9
25. $72 \div 8 =$ 9
26. $28 \div 7 =$ 4

Here is a code.

A	T	W	O
6	7	8	9

Divide. What is the name of the city?

$4\overline{)36}$	$5\overline{)35}$	$9\overline{)63}$	$9\overline{)54}$	$8\overline{)64}$	$7\overline{)42}$
9	7	7	6	8	6
O	T	T	A	W	A

9 $3 \times 4 = 12$ 8

NAME

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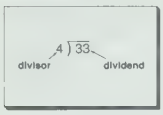
Remainders

Divide 33 by 4.



Think.
$4 \times ? = 33$
$4 \cdot 8 = 32$
$4 \cdot 9 = 36$ (too much)

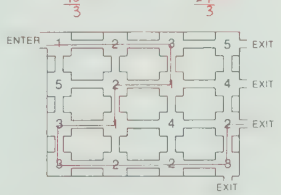
Write.
quotient remainder
$8\text{ R}1$
$4\overline{)33}$
32
1

Find the quotient and the remainder. Write the multiplication fact you use.

1. $2\overline{)19}$ $9\text{ R}1$ $\begin{array}{r} 2 \\ \times 9 \\ \hline 18 \end{array}$
2. $3\overline{)16}$ $5\text{ R}1$ $\begin{array}{r} 3 \\ \times 5 \\ \hline 15 \end{array}$
3. $4\overline{)27}$ $6\text{ R}3$ $\begin{array}{r} 4 \\ \times 6 \\ \hline 24 \end{array}$
4. $7\overline{)47}$ $6\text{ R}5$ $\begin{array}{r} 7 \\ \times 6 \\ \hline 42 \end{array}$
5. $8\overline{)68}$ $8\text{ R}4$ $\begin{array}{r} 8 \\ \times 8 \\ \hline 64 \end{array}$
6. $5\overline{)49}$ $9\text{ R}4$ $\begin{array}{r} 5 \\ \times 9 \\ \hline 45 \end{array}$

Divide. Use the remainders to find the correct path through the maze.

7. $2\overline{)17}$ $8\text{ R}1$
8. $3\overline{)11}$ $3\text{ R}2$
9. $5\overline{)23}$ $4\text{ R}3$
10. $3\overline{)28}$ $9\text{ R}1$
11. $4\overline{)30}$ $7\text{ R}2$
12. $6\overline{)25}$ $4\text{ R}1$
13. $5\overline{)43}$ $8\text{ R}3$
14. $4\overline{)27}$ $6\text{ R}3$
15. $5\overline{)42}$ $8\text{ R}2$
16. $6\overline{)56}$ $9\text{ R}2$
17. $9\overline{)84}$ $9\text{ R}3$
18. $4\overline{)34}$ $8\text{ R}2$



9 R1 $2 \times 9 = 18$ 8 R1 6 R5 $7 \times 6 = 42$

NAME

SPM 5 Masters
With pages 84-85

21

Regrouping Tens

Divide 72 by 3.

72 = 7 tens 2 ones.

Divide the tens.

3 × 2 tens = 6 tens

3 × 3 tens = 9 tens (too many)

```
   20
3 ) 72
   60
   12
```

Divide the ones.

3 × 4 ones = 12 ones

```
    4
   20
3 ) 72
   60
   12
   12
    0
```

Add for the quotients.

```
    4
   20   | 24
3 ) 72
   60
   12
   12
    0
```

Divide.

1. 3) 55 → 18 R1 (30, 25, 24, 1)
2. 2) 53 → 26 R1 (40, 13, 12, 1)
3. 3) 86 → 28 R2 (60, 26, 24, 2)
4. 4) 73 → 18 R1 (40, 33, 32, 1)
5. 2) 73 → 36 R1 (60, 13, 12, 1)
6. 4) 65 → 16 R1 (40, 25, 24, 1)
7. 5) 73 → 14 R3 (50, 23, 20, 3)
8. 6) 99 → 16 R3 (60, 39, 36, 3)
9. 8) 94 → 11 R6 (80, 14, 8, 6)
10. 4) 70 → 17 R2 (40, 30, 28, 2)

11. 86 ÷ 5 = 17 R1
12. 74 ÷ 6 = 12 R2
13. 83 ÷ 7 = 11 R6
14. 57 ÷ 4 = 14 R1

Divide. Circle the two problems that have the same answer.

6) 73 → 12 R1 (60, 13, 12, 1)
8) 99 → 12 R3 (80, 19, 16, 3)
5) 62 → 12 R2 (50, 12, 10, 2)
7) 86 → 12 R2 (70, 16, 14, 2)
5) 64 → 12 R4 (50, 14, 10, 4)

16 R1 · 18 R1 · 17 R1

NAME

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With pages 86-87

22

Regrouping Hundreds, Regrouping Tens

Divide 435 by 5.

435 = 4 hundreds 3 tens 5 ones.

Divide the hundreds.
Regroup 4 hundreds 3 tens as 43 tens.

5 × 8 tens = 40 tens
5 × 9 tens = 45 tens
(too many)

```
   80
5 ) 439
  400
   39
```

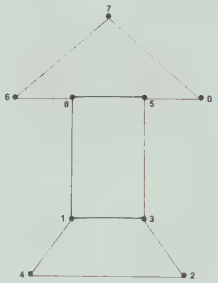
Divide the tens.
Regroup 3 tens 9 ones as 39 ones.

5 × 7 ones = 35 ones
5 × 8 ones = 40 ones
(too many)

```
    7   | 87 R4
   80
5 ) 439
  400
   39
   35
    4
```

Add and write the remainder

Divide. Connect the dots in the order of the remainders.



1. 2) 349 → 174 R1 (200, 149, 140, 9, 8, 1)
2. 5) 379 → 75 R4 (350, 29, 25, 4)
3. 3) 281 → 93 R2 (270, 11, 9, 2)
4. 5) 388 → 77 R3 (350, 38, 35, 3)
5. 6) 707 → 117 R5 (600, 107, 60, 47, 42, 5)
6. 6) 732 → 122 (600, 132, 120, 12, 12, 0)
7. 9) 835 → 92 R7 (810, 25, 18, 7)
8. 8) 934 → 116 R6 (800, 134, 80, 54, 48, 6)
9. 9) 422 → 46 R8 (360, 62, 54, 8)

174 R1 · 92 R7 · 77 R3

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With pages 88-89

23

Dividing by a One-Digit Number

Divide 5381 by 4.

Divide the thousands.

```
  1000
4 ) 5381
  4000
  1381
```

Divide the hundreds.

```
   300
  1000
4 ) 5381
  4000
  1381
  1200
   181
```

Regroup 1 thousand 3 hundreds as 13 hundreds.

Divide the tens.

```
    40
   300
  1000
4 ) 5381
  4000
  1381
  1200
   181
   160
    21
```

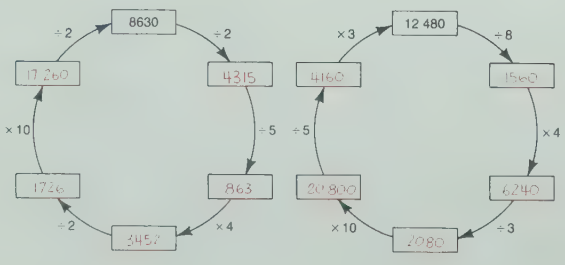
Regroup 1 hundred 5 tens as 15 tens.

Divide the ones.

```
     5
    40
   300   | 1345 R1
  1000
4 ) 5381
  4000
  1381
  1200
   181
   160
    21
    20
     1
```

Regroup 2 tens 1 one as 21 ones.

Follow the instructions.



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24

Checking Division

You can use multiplication and addition to check your answers in division.

Divide

```
  281 R2
3 ) 845
  600
  245
  240
    5
    3
    2
```

Check.

```
  281  ← quotient
×   3  ← divisor
  843
+   2  ← remainder
  845  ← dividend
```

Use multiplication and addition to check George's test paper. Correct any wrong answers.

Name George

1. 2) 284 → 142 (142 × 2 = 284)
2. 3) 378 → 129 (129 × 3 = 387)
3. 2) 457 → 228 (228 × 2 = 456)
4. 4) 355 → 88 (88 × 4 = 352)
5. 5) 1345 → 269 (269 × 5 = 1345)
6. 2) 2384 → 1191 R1 (1191 × 2 = 2382; + 1 = 2383)
7. 5) 3265 → 453 (453 × 5 = 2265)
8. 3) 4358 → 1452 R2 (1452 × 3 = 4356; + 2 = 4358)
9. 6) 2548 → 424 R4 (424 × 6 = 2544; + 4 = 2548)
10. 2) 16 426 → 8213 (8213 × 2 = 16 426)
11. 3) 3829 → 1276 R2 (1276 × 3 = 3828; + 2 = 3830)
12. 6) 18 329 → 3540 R4 (3540 × 6 = 21 240; + 4 = 21 244)

8213 × 2 = 16 426 · 142 × 2 = 284

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25

Finding the Average

Sonia bowled 3 games. Her scores were 94, 110, and 84. What was her average score?

Add the scores to find her total score.

$$\begin{array}{r} 94 \\ 110 \\ +\ 84 \\ \hline 288 \end{array}$$

Divide by the number of games to find her average score.

$$3\overline{)288}\quad \begin{array}{r} 96 \\ 27 \\ 18 \\ \hline 18 \\ \hline 0 \end{array}$$

Sonia's average score is 96.

Solve.

1. Cindy scored 2 goals in Saturday's soccer game. She scored 4 goals in Sunday's game. What was the average number of goals she scored in each game?

   3

2. Fred studied 15 min on Monday, 25 min on Tuesday, 40 min on Wednesday, and 20 min on Thursday. What was the average amount of time he spent studying each day?

   25 min

3. Pierre received the following math scores: 98, 92, 81, 86, and 88. What was his average score?

   89

4. Marta got the following scores on her electronic Wham-o game: 475, 247 and 532. What was her average score?

   418

Find each average. Circle the average that is different.

72 buttons on 9 skirts. 8	54 players in 6 teams. 9
56 pictures on 7 album pages. 8	24 h of sleep in 3 days. 8
32 books on 4 shelves. 8	40 problems finished in 5 min. 8

3 goals · 89

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26

Using Decimals to Show Tenths

Each square is divided into ten equal parts.

ones	•	tenths
2	•	3

2 wholes and $\frac{3}{10}$ are shaded. We write 2.3.

How many wholes and how many tenths are shaded? Write the decimal for each.

1.

ones	•	tenths
2	•	6

2.6

2.

ones	•	tenths
1	•	3

1.3

Write the decimals.

3. eight and four-tenths 8.4
4. two-tenths 0.2
5. one-tenth 0.1
6. ten and nine-tenths 10.9

Write the words.

7. 0.8 eight-tenths
8. 8.9 eight and nine-tenths
9. 10.5 ten and five-tenths
10. 0.5 five tenths

Match the decimals with their word names.

1.1	ten and zero-tenths
10.0	two and one-tenth
0.1	one and one-tenth
2.1	one and two-tenths
1.2	one-tenth

4.0	fourteen and four-tenths
0.4	four and zero-tenths
14.0	four and four-tenths
14.4	four-tenths
4.4	fourteen

2.6 · 8.4 · eight-tenths

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With pages 102-103

27

Using Decimals to Show Hundredths

Each square is divided into 100 equal parts.

ones	•	tenths	hundredths
1	•	2	3

1 whole and $\frac{23}{100}$ are shaded. We write 1.23.

How many wholes and how many hundredths are shaded?

1.

ones	•	tenths	hundredths
2	•	2	0

2.20

2.

ones	•	tenths	hundredths
0	•	4	5

0.45

Write the decimals.

3. 8 and 32 hundredths 8.32
4. 16 hundredths 0.16
5. 2 and 12 hundredths 2.12
6. 5 and 4 hundredths 5.04

Write the words.

7. 6.20 six and twenty-hundredths
8. 0.02 two-hundredths
9. 0.39 thirty-nine hundredths
10. 4.35 four and thirty-five hundredths

Match each decimal number with two word names.

0.3	10 tenths = 100 hundredths
0.4	3 tenths = 30 hundredths
1	1 tenth = 10 hundredths
0.1	40 tenths = 400 hundredths
4	4 tenths = 40 hundredths

six and twenty hundredths · 8.32 · 2.20

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28

Comparing and Ordering Decimals

Compare 3.29 and 3.4.

Write each number with the same number of decimal places.

3.29 = 3.29

3.4 = 3.40

Adding zeros to the right of a decimal does not change the value.

Compare each digit.

ones	•	tenths	hundredths
3	•	2	9
3	•	4	0

same ↓ 2 < 4 so

3.29 < 3.40

Use >, <, or = to make true statements.

1. 1.38 < 2.38
2. 3.0 = 3.00
3. 4.5 > 4.05
4. 4.36 < 4.63
5. 5.4 > 5.35
6. 3.8 = 3.80
7. 8.9 < 8.91
8. 6.3 < 6.43
9. 4.2 > 3.8
10. 24.39 > 24.25
11. 17.6 > 17.59
12. 98.3 = 98.30

Connect the dots in order from least to greatest.

Connect the dots in order from greatest to least.

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Rounding Decimals

Study the chart.

Number	Round to this place value.	Check the digit to its right.	Is it 5 or greater?	Round
1.84	ones	tenths	yes	up to 2
1.84	tenths	hundredths	no	down to 1.8

Round to the nearest whole number.

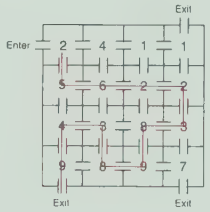
1. 3.8 4
2. 2.4 2
3. 5.5 6
4. 11.8 12
5. 2.38 2
6. 4.72 5
7. 5.83 6
8. 6.92 7
9. 9.3 9
10. 9.8 10
11. 13.54 14
12. 23.298 23

Round to the nearest tenth.

13. 1.31 1.3
14. 2.47 2.5
15. 1.82 1.8
16. 0.95 1.0
17. 6.382 6.4
18. 3.333 3.3
19. 9.290 9.3
20. 2.350 2.4
21. 1.099 1.1
22. 2.396 2.4
23. 17.342 17.3
24. 28.828 28.8

Round each number to the nearest whole number. Then follow your answers through the maze.

a. 2.3 2
b. 4.6 5
c. 5.8 6
d. 1.5 2
e. 2.3 2
f. 3.2 3
g. 7.8 8
h. 8.5 9
i. 8.2 8
j. 3.4 3
k. 3.6 4
l. 8.8 9



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Adding Decimals

Add 13.2, 14.3, and 11.8.

Add the tenths and regroup.

```
  1
 13.2
 14.3
+11.8
  3
```

Line up the decimal points.

Add the ones.

```
  1
 13.2
 14.3
+11.8
  9 3
```

Add the tens.

```
  1
 13.2
 14.3
+11.8
 39.3
```

Put decimal point in line with the others

Add.

1. 3.5 + 2.4 = 59
2. 1.3 + 3.5 = 48
3. 7.4 + 2.1 = 95
4. 6.9 + 2.5 = 94
5. 7.8 + 3.8 = 116
6. 6.38 + 2.47 = 885
7. 2.24 + 5.38 = 762
8. 4.85 + 3.86 = 871
9. 3.82 + 4.68 = 850
10. 2.88 + 3.35 = 623

Carlo is locked out of his house. He needs to find the key whose sum is 26.1. Can you help him find it in 3 tries or less?

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Subtracting Decimals

Subtract 5.80 from 7.29.

Subtract hundredths.

```
 7.29
-5.80
  9
```

Line up the decimal points

Regroup 7 ones 2 tenths as 6 ones 12 tenths. Subtract the tenths.

```
  6 12
 7.29
-5.80
  .49
```

Subtract the ones.

```
  6 12
 7.29
-5.80
 1.49
```

Place the decimal point in line with the others

Subtract.

1. 8.5 − 3.2 = 5.3
2. 9.4 − 2.5 = 6.9
3. 3.8 − 1.2 = 2.6
4. 7.2 − 4.5 = 2.7
5. 8.5 − 3.9 = 4.6
6. 7.95 − 3.87 = 4.08
7. 6.49 − 2.83 = 3.66
8. 5.93 − 2.84 = 3.09
9. 4.30 − 1.82 = 2.48
10. 4.00 − 2.35 = 1.65

Subtract. Add to check.

11. 8.6 − 2.9 = 5.7 (+2.9 = 8.6)
12. 5.03 − 0.35 = 4.68 (+0.35 = 5.03)
13. 9.38 − 6.72 = 2.66 (+6.72 = 9.38)
14. 24.39 − 16.93 = 7.46 (+16.93 = 24.39)

Subtract across and down. Then find the differences for the corner box.

9.35	3.68	5.67
3.08	1.66	1.42
6.27	2.02	4.25

8.39	2.18	6.21
2.78	0.82	1.96
5.61	1.36	4.25

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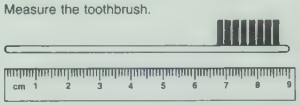
Metres, Centimetres, and Millimetres

Measure the toothbrush.



The toothbrush is 9 cm long.

How many millimetres long is it?

1 cm = 10 mm
9 cm = 90 mm

The toothbrush is 90 mm long.

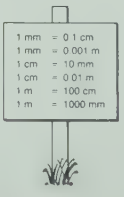
How many metres long is it?

1 cm = 0.01 m
9 cm = 0.09 m

The toothbrush is 0.09 m long.

Write the equivalent measurements in the chart. Use the information on the sign if needed.

	millimetres	centimetres	metres
1.	9.7 mm	0.97 cm	0.0097 m
2.	4 mm	0.4 cm	0.004 m
3.	170 mm	17 cm	0.17 m
4.	2300 mm	230 cm	2.3 m
5.	6200 mm	620 cm	6.2 m
6.	73 000 mm	7300 cm	73 m



Circle the best estimate.

7. The length of a car is about: 500 mm 60.8 cm (6 m)
8. The length of a paper clip is about: (25 mm) 25 cm 0.2 m
9. The width of a book is about: 200 mm (2 cm) 0.2 m
10. The thickness of a quarter is about: (2 mm) 2 cm 0.02 m

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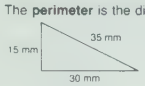
33

Finding the Perimeter

The **perimeter** is the distance around a figure.



To find the perimeter, add the lengths of the sides.

In millimetres:

$$\begin{array}{r} 15 \\ 30 \\ +\ 35 \\ \hline 80 \end{array}$$

The perimeter of the triangle is 80 mm.

In centimetres:

$$\begin{array}{r} 1.5 \\ 3.0 \\ +\ 3.5 \\ \hline 8.0 \end{array}$$

The perimeter of the triangle is 8 cm.

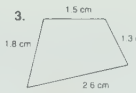
Find the perimeter for each figure.

1.

77 mm

2.

72 mm

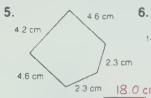
3. 

72 cm

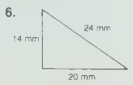
4.

75 cm

Find the perimeter in the given unit. Then, complete the chart to show the perimeter in each unit.

5. 

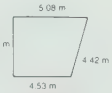
18.0 cm

6. 

58 mm

7.

35.0 m

8. 

18.34 m

	millimetres	centimetres	metres
5.	180 mm	18.0 cm	0.180 m
6.	58 mm	5.8 cm	0.058 m
7.	35 000 mm	3500 cm	35.0 m
8.	18 340 mm	1834 cm	18.34 m

77 mm . 180 mm, 18 cm, 0.18 m

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34

Finding the Area of a Rectangle

What is the area of this rectangle?

Each small square represents 1 cm².

You can count the squares.
Counting shows that there are 15 cm² inside the rectangle.

You can also multiply.
There are 3 rows of square centimetres with 5 in each row.
3 · 5 = 15 cm²

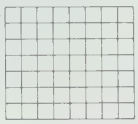
Each small square represents 1 cm².
What is the area of each figure?

1.
14 cm²

2.

3.

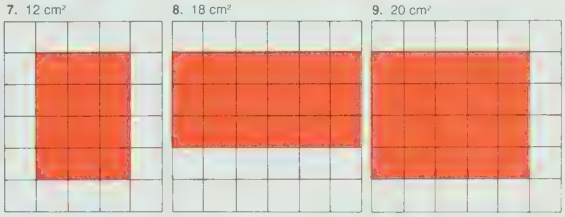
4.
30 cm²

5. 

6.
56 cm²

Draw a rectangle with each area.

7. 12 cm²
8. 18 cm²
9. 20 cm²



Drawings may vary

30 cm², 14 cm²

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35

Multiplying Decimals by One-Digit Whole Numbers

Multiply 3.8 and 2.

Multiply the tenths.

$$\begin{array}{r} {\scriptstyle 1} \\ 3.8 \\ \times\ 2 \\ \hline 6 \end{array}$$

2 × 8 tenths = 16 tenths
Regroup as 1 one 6 tenths.

Multiply the ones.

$$\begin{array}{r} {\scriptstyle 1} \\ 3.8 \\ \times\ 2 \\ \hline 7.6 \end{array}$$

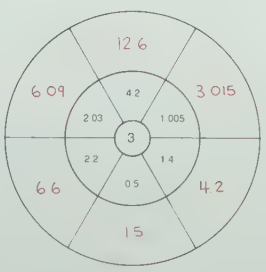
Put in the decimal point

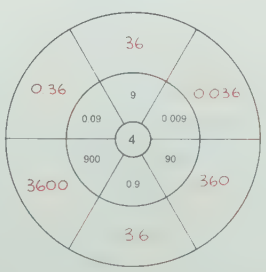
2 × 3 ones = 6 ones
6 ones + 1 one = 7 ones

Multiply

1. $\begin{array}{r} 3.4 \\ \times\ 2 \\ \hline 6.8 \end{array}$
2. $\begin{array}{r} 4.3 \\ \times\ 3 \\ \hline 12.9 \end{array}$
3. $\begin{array}{r} 2.8 \\ \times\ 6 \\ \hline 16.8 \end{array}$
4. $\begin{array}{r} 1.9 \\ \times\ 2 \\ \hline 3.8 \end{array}$
5. $\begin{array}{r} 17.3 \\ \times\ 5 \\ \hline 86.5 \end{array}$
6. $\begin{array}{r} 0.28 \\ \times\ 4 \\ \hline 1.12 \end{array}$
7. $\begin{array}{r} 2.93 \\ \times\ 5 \\ \hline 14.65 \end{array}$
8. $\begin{array}{r} 0.06 \\ \times\ 4 \\ \hline 0.24 \end{array}$
9. $\begin{array}{r} 19.7 \\ \times\ 3 \\ \hline 59.1 \end{array}$
10. $\begin{array}{r} 72.48 \\ \times\ 2 \\ \hline 144.96 \end{array}$

Complete the product wheels. Find each product by multiplying a number by the number in the centre.





68 . 112

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36

Estimating the Product

Estimate the product.

$$\begin{array}{r} 5.2 \rightarrow\ 5 \\ \times\ 3 \rightarrow \times 3 \\ \hline 15 \end{array}$$

Round to the nearest whole number.
Then, multiply.

Find the exact product.

$$\begin{array}{r} 5.2 \\ \times\ 3 \\ \hline 15.6 \end{array}$$

Use your estimate to help you decide where to put the decimal point

Round to the nearest whole number. Estimate the product, then find the exact product.

1. 4.6 → 5, × 2 → × 2; 9.2, 10
2. 7.3 → 7, × 6 → × 6; 43.8, 42
3. 3.48 → 3, × 3 → × 3; 10.44, 9
4. 4.08 → 4, × 5 → × 5; 20.40, 20
5. 2.867 → 3, × 9 → × 9; 25.803, 27
6. 42.68 → 43, × 4 → × 4; 170.72, 172

Estimate the product. Then use your estimate to choose the exact product. It is not necessary to compute the exact product.

7. 2.4 → 2, × 3 → × 3; 6
   A. 0.072
   B. 0.72
   C. 7.2

8. 4.5 → 5, × 9 → × 9; 45
   A. 4.05
   B. 40.5
   C. 405

9. 4.7 → 5, × 4 → × 4; 20
   A. 0.188
   B. 1.88
   C. 18.8

10. 3.28 → 3, × 6 → × 6; 18
    A. 0.1968
    B. 1.968
    C. 19.68

11. 2.38 → 2, × 3 → × 3; 6
    A. 0.714
    B. 7.14
    C. 71.4

12. 5.383 → 5, × 6 → × 6; 30
    A. 32.298
    B. 322.98
    C. 3229.8

9.2.5 · 2 · 10 . 2 × 3 = 6, C . 20.40, 4 × 5 = 20

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Multiplying Decimals and Whole Numbers

Multiply 3.4 × 12 Exact Answer	Estimate	Multiply 3.42 × 12. Exact Answer
3.4	3	3.42
× 12	× 12	× 12
68	36	684
340	The estimate shows where to place the decimal point	3420
40.8		41.04

Multiply.

1. 24 × 4.2 = 48, 960, 1008
2. 0.35 × 23 = 105, 700, 805
3. 1.36 × 16 = 816, 1360, 21.76
4. 324 × 2.5 = 1620, 6480, 8100
5. 2.36 × 43 = 708, 9440, 101.48
6. 4.53 × 1.8 = 3624, 4530, 8154
7. 20.9 × 3.3 = 627, 6270, 68.97
8. 3.574 × 34 = 14296, 107220, 121.516

Here is a code.

114.8	115	133.2	136.5
R	A	E	D

What kind of snake doesn't multiply? Multiply to solve the riddle.

46 × 25 = 230, 920, 1150	9.1 × 15 = 455, 910, 13.65	5.46 × 25 = 2730, 10920, 136.50	3.6 × 37 = 252, 1080, 133.2	41 × 28 = 328, 820, 1148
A	D	D	E	R

1148 1133.2 136.50 13.65 1150

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100, 10, 0.1, 0.01 as Factors

3.72 × 10 = 37.2 Move decimal point 1 place to the right

3.72 × 100 = 372. Move decimal point 2 places to the right

3.72 × 0.1 = 0.372 Move decimal point 1 place to the left

3.72 × 0.01 = 0.0372 Move decimal point 2 places to the left

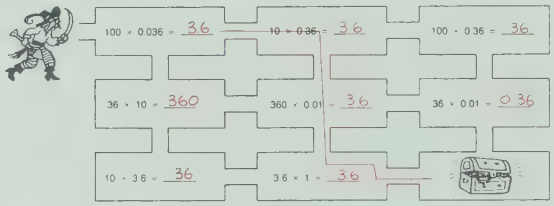
Complete the patterns.

1. 58 × 10 = 580
   58 × 100 = 5800
   58 × 0.1 = 58
   58 × 0.01 = 0.58
2. 2.6 × 10 = 26
   2.6 × 100 = 260
   2.6 × 0.1 = 0.26
   2.6 × 0.01 = 0.026

Multiply.

3. 4 × 0.1 = 0.4
4. 230 × 0.01 = 2.3
5. 10 × 43.7 = 437
6. 0.1 × 0.009 = 0.0009
7. 2.3 × 0.1 = 0.23
8. 4.58 × 0.01 = 0.0458

Lead the pirate to the treasure. Solve the problems below. Draw lines connecting the boxes in which the product is 3.6.



0.4 580, 5800, 5.8, 0.58 0.0009

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Multiplying Decimal Tenths, One Factor Less Than 1.0

Multiply 4.3 × 0.6.

Multiply.

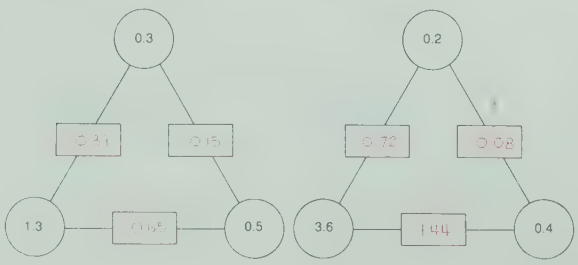
$$\begin{array}{r} {\scriptstyle 1} \\ 4.3 \\ \times\ 0.6 \\ \hline 2.58 \end{array}$$

Remember tenths × tenths equals hundredths

Multiply.

1. 0.4 × 0.3 = 0.12
2. 0.3 × 0.6 = 0.18
3. 0.8 × 0.4 = 0.32
4. 0.5 × 0.5 = 0.25
5. 2.3 × 0.4 = 0.92
6. 1.9 × 0.6 = 1.14
7. 6.3 × 0.9 = 5.67
8. 43.2 × 0.7 = 30.24

Multiply the factors in the circles. Write the products in the squares.



0.12 0.92

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Multiplying Decimal Tenths

Rosa needs carpeting for her room. The floor measures 8.4 m long and 5.3 m wide. How much carpeting will she need to cover the entire floor?

Multiply 8.4 × 5.3.

Multiply by the tenths.	Multiply by the ones.	Add.
$\begin{array}{r} {\scriptstyle 1} \\ 8.4 \\ \times\ 5.3 \\ \hline 252 \end{array}$	$\begin{array}{r} {\scriptstyle 2} \\ 8.4 \\ \times\ 5.3 \\ \hline 252 \\ 4200 \end{array}$	$\begin{array}{r} 8.4 \\ \times\ 5.3 \\ \hline 252 \\ +\ 4200 \\ \hline 44.52 \end{array}$ Place the decimal point

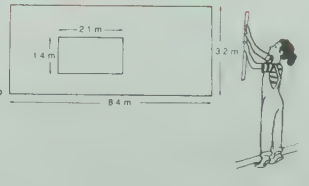
Rosa will need 44.52 m² of carpeting.

Multiply.

1. 2.3 × 4.5 = 115, 920, 10.35
2. 3.8 × 7.2 = 76, 2660, 27.36
3. 5.4 × 3.3 = 162, 1620, 17.82
4. 16.8 × 1.5 = 840, 1680, 25.20
5. 31.4 × 2.4 = 1256, 6280, 75.36
6. 29.3 × 4.3 = 879, 11720, 125.99
7. 63.2 × 12.4 = 2528, 12640, 63200, 783.68
8. 235.4 × 11.8 = 18832, 23540, 235400, 2777.72

Solve.

9. Rosa also wants to wallpaper a wall that measures 8.4 m by 3.2 m. There is a window in the wall that measures 2.1 m by 1.4 m. How much wallpaper will Rosa need?



23.94 m²

10.35 75.36

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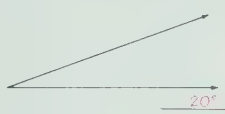
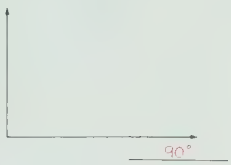
Measuring Angles

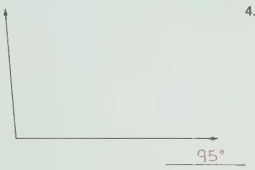
The angle measures 35°.

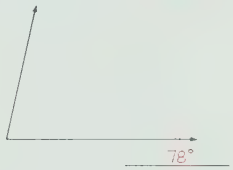
35 degrees

Measure these angles.

1. 
20°

2. 
90°

3. 
95°

4. 
78°

Name the kind of angle shown by the hands on the clocks.

5.
acute

6.
right

7.
obtuse

8.
obtuse

acute 20°

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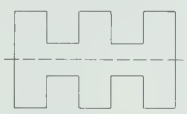
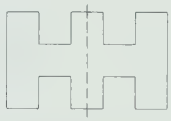
Line Symmetry

This shape has two lines of symmetry.



If you fold the shape on this dotted line, you have two matching parts.

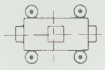


If you fold the shape on this dotted line, you have two matching parts.

Draw lines of symmetry. How many did you find?

1.
2

2.
1

3. 
2

4.
1

5.
2

6.
1

7.
1

8.
2

9.
1

10.
2

11.
1

12.
2

2 lines

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Triangles and Quadrilaterals

equilateral triangle

3 equal sides

isosceles triangle

2 equal sides

scalene triangle

no equal sides

trapezoid

one pair of parallel sides

parallelogram

two pairs of parallel sides

rhombus

a parallelogram with 4 sides the same length

rectangle

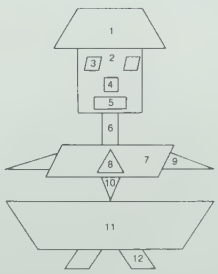
a parallelogram with 4 right angles

square

a rectangle with 4 sides the same length

Write the names of the numbered shapes.

1. trapezoid
2. square
3. rhombus
4. square
5. rectangle
6. rectangle
7. parallelogram
8. equilateral triangle
9. scalene triangle
10. isosceles triangle
11. trapezoid
12. rhombus



trapezoid

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Dividing by a One-Digit Number

Divide 2398 by 5.

2 is less than 5, so regroup and divide 23 hundreds.	3 is less than 5, so regroup and divide 39 tens.	4 is less than 5, so regroup and divide 48 ones.
4 5) 2398 20 3	47 5) 2398 20 39 35 4	479 R3 5) 2398 20 39 35 48 45 3

Divide. If you do the problems correctly, each quotient will appear twice.

1. 3) 584 — 194 R2
2. 4) 938 — 234 R2
3. 6) 1166 — 194 R2
4. 5) 4364 — 872 R4
5. 2) 7939 — 3969 R1
6. 6) 5236 — 872 R4
7. 7) 1640 — 234 R2
8. 3) 11 908 — 3969 R1

3969 R1 . 194 R2

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Zeros in the Quotient

Divide 2435 by 4.

2 is less than 4, so regroup and divide 24 hundreds.

$$4\overline{)2435}\quad 6,\ 24,\ 0$$

There are 0 hundreds left and 3 is less than 4, so put 0 in the tens place.

$$4\overline{)2435}\quad 60,\ 24,\ 03$$

Regroup 3 tens 5 ones as 35 ones and divide.

$$4\overline{)2435}\quad 608\ R3,\ 24,\ 035,\ 32,\ 3$$

Tick-Tack-Toe

Divide. You win when you have 3 quotients the same in a row.

$7\overline{)3565}$ 509 R2	$3\overline{)1807}$ 602 R1	$8\overline{)3202}$ 400 R2
$4\overline{)2034}$ 508 R2	$6\overline{)3056}$ 509 R2	$9\overline{)3602}$ 400 R2
$2\overline{)6085}$ 304 R1	$5\overline{)15\,211}$ 3042 R1	$3\overline{)1529}$ 509 R2

304 R1 · 508 R2 · 509 R2

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Dividing by a Multiple of 10

Divide 1835 by 20.

$$20\overline{)1835}\quad 9,\ 180,\ 3$$

18 is less than 20, so think of 18 hundreds 3 tens as 183 tens. Then, divide.

$$20\overline{)1835}\quad 91\ R15,\ 180,\ 35,\ 20,\ 15$$

Complete the division.

Here is ■ code.

8 R6	8 R22	71	76 R5	83	90	90 R2	96 R12
I	S	O	R	E	T	D	W

Why doesn't a bicycle go as fast as a car? Divide to solve the riddle.

$30\overline{)246}$ 8R6	$20\overline{)1800}$ 90	$40\overline{)342}$ 8R22	$30\overline{)2700}$ 90	$50\overline{)4812}$ 96R12	$20\overline{)1420}$ 71
I	T	S	T	W	O

$40\overline{)3600}$ 90	$40\overline{)326}$ 8R6	$20\overline{)1525}$ 76R5	$40\overline{)3320}$ 83	$50\overline{)4502}$ 90R2
T	I	R	E	D

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Dividing by a Two-Digit Number

Divide 2449 by 48.

$$48\overline{)2449}\quad 4,\ 192,\ 52$$

Think $50\overline{)2442}$. 52 is greater than the divisor. 4×48 is too small. Try 5×48.

$$48\overline{)2449}\quad 51\ R1,\ 240,\ 49,\ 48,\ 1$$

$5 \times 48 = 240$. Complete the division.

Divide. Place the quotients in the puzzle. The last digit of one answer is the first digit of the next.

A 2	O	B 6	2	C 1	3	D 5	7	E 3	1
A. $32\overline{)6592}$ 206			B. $14\overline{)8694}$ 621			C. $48\overline{)6480}$ 135			F 6
									O
									G 2
D. $24\overline{)13\,752}$ 573			E. $37\overline{)11\,692}$ 316			F. $21\overline{)12\,642}$ 602			3
									H 8
									3
G. $51\overline{)12\,138}$ 238			H. $16\overline{)13\,312}$ 832			I. $63\overline{)18\,711}$ 297			I 2
									9
									7

206 · 238 · 573

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Estimating the Quotient

In one year, Sam earned $31 460. About how much did he earn each week?

Estimate the quotient.

Round the divisor and dividend.

$$52\overline{)\$31\,460} \rightarrow 50\overline{)\$31\,000}$$

Think $5\overline{)31}$. $5 \times 6 = 30$ so use a 6 in the quotient.

$50 \times 6 = 300$
$50 \times 600 = 30\,000$
$30\,000$ is close to $31\,000$, so 600 is the estimate.

Sam earned about $600 each week.

Find the exact quotient.

Divide in the usual way.

$$52\overline{)\$31\,460}\quad \$605,\ 312,\ 260,\ 260,\ 0$$

Sam earned exactly $605 each week.

Estimate. Then use your estimate to choose the exact quotient from the answer strip. Place the letter of the problem under its exact answer.

D. $21\overline{)1827}$ $20\overline{)1800}$ 90 · V. $52\overline{)3328}$ $50\overline{)3300}$ 66 · E. $38\overline{)2812}$ $40\overline{)2800}$ 70

S. $87\overline{)2697}$ $90\overline{)2700}$ 30 · L. $51\overline{)2652}$ $50\overline{)2700}$ 54 · O. $83\overline{)1909}$ $80\overline{)1900}$ 20

31	23	52	64	74	87
S	O	L	V	E	D

90) 2700 · 20) 1800

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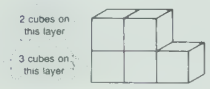
Volume in Cubic Centimetres

Volume is the number of cubic centimetres in a solid.

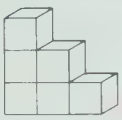
This is a cubic centimetre

What is the volume of this solid?



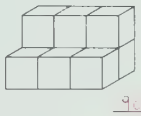
There are 5 cubic centimetres.
The volume of the solid is 5 cm³.

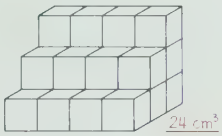
Find the volume in cubic centimetres.

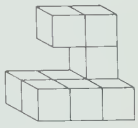
1. 

2.

3.

4. 

5. 

6. 

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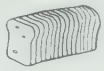
Mass in Grams and Kilograms

The paper clip has ≈ mass of about 1 g.

The loaf of bread has ≈ mass of about 500 g

The bat has ≈ mass of about 1 kg.



Circle the best estimate.

1.
   A. 1 g
   B. 150 g
   C. 1 kg

2.
   A. 1 g
   B. 10 g
   C. 1 kg

3.
   A. 50 g
   B. 500 g
   C. 5 kg

4.
   A. 3 g
   B. 150 g
   C. 1.5 kg

Complete the chart. Remember: 1 kg = 1000 g, and 1 g = 0.001 kg.

5.

g	4000	8000		40	3	3450
kg	–	8	2.5		0.003	3.45

Solve.

6. A pile of pennies has a mass of 285 g. Each penny has ≈ mass of about 3 g. How many pennies are in the pile?

   95

7. A box of rice has a mass of 1 kg. The cook uses 35 g of rice for each serving. Is there enough rice to serve 30 people?

   no. 35 x 30 = 1050 g

6 cm³ 24 cm³ 14 cm³

5 kg 1 g 95

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Dividing Ones and Tenths with Regrouping

Divide 5.4 by 3.

Divide the ones.

$$3\overline{)5.4}\quad 1,\ 3,\ 2$$

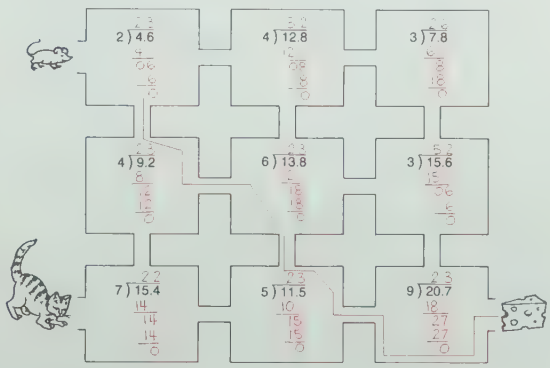
Divide the tenths.

$$3\overline{)5.4}\quad 1.8,\ 3,\ 24,\ 24,\ 0$$

Line up the decimal points.

Think of 2 ones 4 tenths as 24 tenths.

Divide. The mouse must follow a path where the quotient is 2.3.
Does your mouse find the cheese or the cat?



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Quotients Less Than 1

Divide 2.58 by 6.

Divide the ones.

$$6\overline{)2.58}\quad 0$$

The divisor is bigger than the dividend. So the first digit in the quotient is 0.

Divide the tenths.

$$6\overline{)2.58}\quad 0.4,\ 24,\ 1$$

Think of 2 ones 5 tenths as 25 tenths.

Divide the hundredths.

$$6\overline{)2.58}\quad 0.43,\ 24,\ 18,\ 18,\ 0$$

Think of 1 tenth 8 hundredths as 18 hundredths.

In each group, circle the quotient that is less than zero. It is not necessary to do the division.

1. 2)6.3, 4)3.2, 6)18.39
2. 3)6.3, 4)9.8, 8)7.4
3. 5)4.2, 6)7.3, 8)8.2
4. 2)11.8, 6)5.83, 4)9.27

Divide. Circle the two presents that have the same quotient.

5. 3)0.42
6. 7)4.55
7. 4)2.36
8. 2)1.16
9. 6)2.28
10. 5)3.30
11. 6)3.54
12. 7)2.45

4)32 0.38 0.14

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Using More Decimal Places

Divide 7 by 4.

Remember: Adding zeros after the decimal point does not change the value of a number.

Divide the ones.

$$4\overline{)7}\quad 1,\ 4,\ 3$$

Divide the tenths.

$$4\overline{)7.0}\quad 1.7,\ 4,\ 30,\ 28,\ 2$$

Put in the decimal point.

Think of 3 ones as 30 tenths.

Divide the hundredths.

$$4\overline{)7.00}\quad 1.75,\ 4,\ 30,\ 28,\ 20,\ 20,\ 0$$

Think of 2 tenths as 20 hundredths.

Divide. Use more zeros when needed.

1. $5\overline{)4}$ → 0.8, 40, 0
2. $6\overline{)3}$ → 0.5, 30, 0
3. $4\overline{)2.6}$ → 0.65, 24, 20, 20, 0
4. $4\overline{)3.8}$ → 0.95, 36, 20, 20, 0
5. $4\overline{)5}$ → 1.25, 4, 10, 8, 20, 20, 0
6. $8\overline{)5}$ → 0.625, 48, 20, 16, 40, 40, 0
7. $8\overline{)0.6}$ → 0.075, 56, 40, 40, 0
8. $5\overline{)11.7}$ → 2.34, 10, 17, 15, 20, 20, 0

Solve.

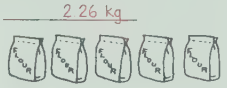
9. How much does each box contain?

0.85 kg

TOTAL MASS 1.7 kg

10. What is the mass of each bag of flour?

2.26 kg



TOTAL MASS 11.3 kg

0.85 kg, 1.25, 0.8

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Dividing by a Two-Digit Number

Study the problems and find the pattern.

$16\overline{)368}$ → 23, 32, 48, 48, 0	$16\overline{)36.8}$ → 2.3, 32, 48, 48, 0	$16\overline{)3.68}$ → 0.23, 32, 48, 48, 0	$16\overline{)0.368}$ → 0.023, 32, 48, 48, 0

This is Lisa's math test. Rewrite and correct any problems Lisa did incorrectly.

Name Lisa

1. ~~$15\overline{)6.3}$~~ → 0.4, 0.42, 60, 30, 30, 0
2. $34\overline{)40.8}$ → 1.2 Correct
3. ~~$15\overline{)5.55}$~~ → 3.70, 0.37, 15|555, 45, 105, 105, 0
4. ~~$14\overline{)18.9}$~~ → 13.5, 135, 14|1890, 14, 49, 42, 70, 70, 0
5. ~~$12\overline{)8.16}$~~ → 68.0, 0.68, 12|816, 72, 96, 96, 0
6. $23\overline{)13.8}$ → 0.6 Correct
7. $15\overline{)6.3}$ → 0.42 Correct
8. ~~$21\overline{)36.75}$~~ → 17.5, 1.75, 21|36.75, 21, 157, 147, 105, 105, 0
9. ~~$35\overline{)70.70}$~~ → 2.2, 2.02, 35|70.70, 70, 070, 70, 0

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Writing Fractions

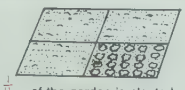
$\frac{2}{3}$ of the hats are shaded.

numerator → $\frac{2}{3}$ is read **two-thirds**. ← denominator

$\frac{1}{2}$ of the hat is shaded.

$\frac{1}{2}$ is read **one-half.**

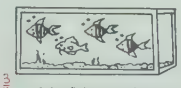
Complete each sentence by writing a fraction.

1. 

$\frac{1}{4}$ of the garden is planted.

2.

$\frac{2}{3}$ of the vases have flowers.

3. 

$\frac{3}{4}$ of the fish are striped.

4.

$\frac{5}{6}$ of the balls are soccer balls.

Write the fraction.

5. 9 roses are in a vase. 5 of them are pink. $\frac{5}{9}$
6. 5 dolls are in a toy box. 2 of them are broken. $\frac{2}{5}$

Write the fractional part of each word. Put the parts together to write a message.

Example: $\frac{1}{2}$ of GAME is GA.

7. $\frac{1}{4}$ of WALL W
8. $\frac{2}{3}$ of ELK el
9. $\frac{1}{6}$ of LIVELY l
10. $\frac{2}{5}$ of DODGE do
11. $\frac{1}{2}$ of NO n
12. $\frac{1}{5}$ of ELBOW e

w e l l d o n e

W, $\frac{6}{5}$, $\frac{1}{4}$

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Finding Equivalent Fractions

Find equivalent fractions for $\frac{1}{3}$.

Multiply by the numerator and the denominator by the same number.

Multiply by 2. Multiply by 3.

$\frac{1}{3} = \frac{2}{6}$ $\frac{1}{3} = \frac{3}{9}$

Find the equivalent fractions for $\frac{18}{24}$.

Divide the numerator and the denominator by the same number.

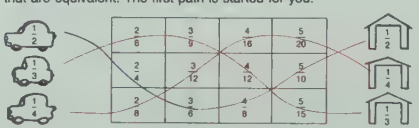
Divide by 2. Divide by 3.

$\frac{18}{24} = \frac{9}{12}$ $\frac{9}{12} = \frac{3}{4}$

Multiply or divide to find equivalent fractions.

1. $\frac{1}{4}$: 1 × 2 → $\frac{2}{8}$; 1 × 3 → $\frac{3}{12}$; 1 × 4 → $\frac{4}{16}$; … → $\frac{5}{20}$
2. $\frac{12}{18}$: 12 ÷ 2 → $\frac{6}{9}$; 6 ÷ 3 → $\frac{2}{3}$
3. $\frac{2}{5}$: 2 × 2 → $\frac{4}{10}$; 2 × 3 → $\frac{6}{15}$; … → $\frac{8}{20}$; … → $\frac{10}{25}$
4. $\frac{18}{42}$: 18 ÷ 2 → $\frac{9}{21}$; 9 ÷ 3 → $\frac{3}{7}$
5. $\frac{4}{7}$: 4 × 2 → $\frac{8}{14}$; 4 × 3 → $\frac{12}{21}$; … → $\frac{16}{28}$; … → $\frac{20}{35}$
6. $\frac{30}{50}$: 30 ÷ 2 → $\frac{15}{25}$; 15 ÷ 5 → $\frac{3}{5}$

Draw 3 paths from start to finish. For each path, connect the fractions that are equivalent. The first path is started for you.



$\frac{2}{6}$, $\frac{3}{9}$, $\frac{4}{16}$, $\frac{5}{20}$

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Finding the Missing Term

Here's how to find the missing term in a pair of equivalent fractions.

Think:	so
$12 \times ? = 24$ $12 \times 2 = 24$	$8 \times 2 = 16$
$\frac{8}{12} = \frac{?}{24}$	$\frac{8}{12} = \frac{16}{24}$

Think:	so
$12 \div ? = 3$ $12 \div 4 = 3$	$8 \div 4 = 2$
$\frac{8}{12} = \frac{?}{3}$	$\frac{8}{12} = \frac{2}{3}$

Find the missing term.

1. $\frac{1}{2} = \frac{6}{12}$
2. $\frac{16}{20} = \frac{4}{5}$
3. $\frac{4}{7} = \frac{8}{14}$
4. $\frac{16}{40} = \frac{2}{5}$
5. $\frac{3}{4} = \frac{6}{8}$
6. $\frac{36}{63} = \frac{4}{7}$

Complete the equivalent fractions in each chart.

7.

$\frac{3}{5}$	$\frac{6}{10}$	$\frac{24}{40}$	$\frac{9}{15}$

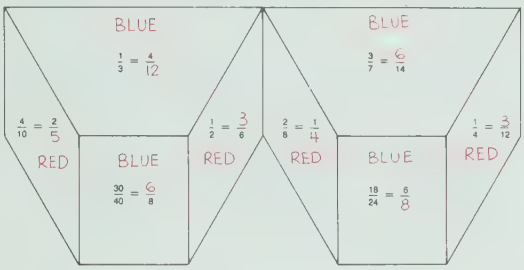
8.

$\frac{2}{8}$	$\frac{1}{4}$	$\frac{4}{16}$	$\frac{5}{20}$

9.

$\frac{1}{3}$	$\frac{10}{30}$	$\frac{2}{6}$	$\frac{4}{12}$

Find the missing terms. Color the space RED if the missing term is a 5 or less. Color the space BLUE if the missing term is greater than 5.



10, 24, 15 — 6 — 5

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Comparing Fractions

Compare $\frac{2}{3}$ and $\frac{1}{2}$.

First write equivalent fractions with common denominators.

$\frac{2}{3} = \frac{4}{6}$ $\quad \frac{1}{2} = \frac{3}{6}$

Then compare the numerators.

$4 > 3$

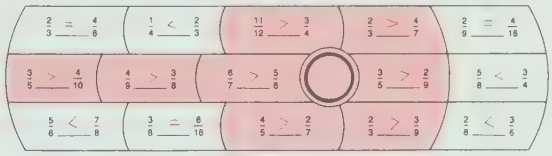
$\frac{4}{6} > \frac{3}{6}$

so $\frac{2}{3} > \frac{1}{2}$

Use <, >, or = to make true statements.

1. $\frac{1}{8} < \frac{1}{6}$; $\frac{3}{24} < \frac{4}{24}$
2. $\frac{4}{5} > \frac{2}{10}$; $\frac{8}{10} > \frac{2}{10}$
3. $\frac{1}{4} = \frac{2}{8}$; $\frac{2}{8} = \frac{2}{8}$
4. $\frac{3}{7} < \frac{2}{3}$; $\frac{9}{21} < \frac{14}{21}$
5. $\frac{3}{5} > \frac{5}{9}$; $\frac{27}{45} > \frac{25}{45}$
6. $\frac{3}{5} = \frac{9}{15}$; $\frac{9}{15} = \frac{9}{15}$
7. $\frac{2}{3} < \frac{3}{4}$; $\frac{8}{12} < \frac{9}{12}$
8. $\frac{5}{6} > \frac{12}{18}$; $\frac{15}{18} > \frac{12}{18}$
9. $\frac{3}{8} > \frac{4}{12}$; $\frac{9}{24} > \frac{8}{24}$

Use <, >, or = to make true statements. Then, shade in the spaces where your answer is >.



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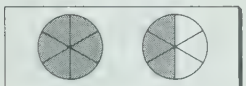
Changing Improper Fractions



$\frac{9}{6}$ or $1\frac{3}{6}$ are shaded.

Change $\frac{9}{6}$ to a mixed number.

$6\overline{)9}$ $\quad -6$ $\quad 3$

1 whole circle

3 sixths of a circle.

Write each improper fraction as a number in mixed form or as a whole number.

1. $\frac{9}{2} = 4\frac{1}{2}$
2. $\frac{7}{5} = 1\frac{2}{5}$
3. $\frac{8}{4} = 2$
4. $\frac{5}{3} = 1\frac{2}{3}$
5. $\frac{18}{5} = 3\frac{3}{5}$
6. $\frac{9}{8} = 1\frac{1}{8}$
7. $\frac{24}{12} = 2$
8. $\frac{37}{7} = 5\frac{2}{7}$
9. $\frac{59}{6} = 9\frac{5}{6}$
10. $\frac{110}{9} = 12\frac{2}{9}$
11. $\frac{113}{5} = 22\frac{3}{5}$
12. $\frac{125}{3} = 41\frac{2}{3}$

Write a number in mixed form.

13. 3 cups of flour are needed for each recipe. How many recipes could you make with 8 cups?

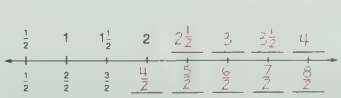
$2\frac{2}{3}$

14. Each sandwich is cut into 4 pieces. How many sandwiches did Bill eat if he ate 7 pieces?

$1\frac{3}{4}$

Name the points on the number line. Use improper fractions and mixed numbers.

15.



$2\frac{2}{3}$ $3\frac{3}{5}$ $4\frac{2}{3}$ $9\frac{5}{6}$

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Adding and Subtracting Fractions

Add the fractions.
Add the whole numbers.
Rename the mixed number.

$1\frac{2}{3}$
$+ 2\frac{2}{3}$
$3\frac{4}{3}$
$3 + \frac{3}{3} + \frac{1}{3}$
$4\frac{1}{3}$

Rename $4\frac{1}{4}$ as $3\frac{5}{4}$.
Subtract the fractions.
Subtract the whole numbers.

$4\frac{1}{4}$
$3 + \frac{4}{4} + \frac{1}{4}$
$3\frac{5}{4}$
$- 2\frac{3}{4}$
$- 2\frac{3}{4}$
$1\frac{2}{4}$

Add or subtract. Then match the problems that have the same answers.

1. $2\frac{3}{8} + 2\frac{7}{8} = 4\frac{10}{8} = 5\frac{2}{8}$
2. $1\frac{4}{5} + 1\frac{3}{5} = 2\frac{7}{5} = 3\frac{2}{5}$
3. $2\frac{3}{4} + \frac{3}{4} = 3\frac{6}{4} = 3\frac{2}{4}$
4. $2\frac{5}{12} + 3\frac{11}{12} = 5\frac{16}{12} = 6\frac{4}{12}$
5. $7 - 3\frac{3}{5} = 6\frac{5}{5} - 3\frac{3}{5} = 3\frac{2}{5}$
6. $7\frac{1}{4} - 3\frac{3}{4} = 6\frac{5}{4} - 3\frac{3}{4} = 3\frac{2}{4}$
7. $10\frac{3}{12} - 3\frac{11}{12} = 9\frac{15}{12} - 3\frac{11}{12} = 6\frac{4}{12}$
8. $9\frac{1}{8} - 3\frac{7}{8} = 8\frac{9}{8} - 3\frac{7}{8} = 5\frac{2}{8}$

Solve.

9. The roast should cook for $3\frac{1}{4}$ h. It has been in the oven $2\frac{3}{4}$ h. How much longer should it cook?

$\frac{1}{2}$ h

10. Justin baby-sat $2\frac{1}{2}$ h on Friday and $3\frac{1}{2}$ h on Sunday. How many hours did he baby-sit in all?

6 h

$2\frac{1}{4}$ $5\frac{2}{8}$ $3\frac{2}{4}$

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Equivalent Fractions and Decimals

To convert a fraction to a decimal, first write an equivalent fraction with 10 or 100 as the denominator. Then convert the equivalent fraction to a decimal.

Write a decimal equivalent to $\frac{3}{4}$.

$\frac{3}{4} = \frac{3 \times 25}{4 \times 25} = \frac{75}{100}$ or 0.75

Write a decimal equivalent to $\frac{3}{4}$.

$\frac{4}{5} = \frac{4 \times 2}{5 \times 2} = \frac{8}{10}$

Complete.

1. $\frac{1}{2} = \frac{5}{10}$ or the decimal 0.5
2. $\frac{1}{4} = \frac{25}{100}$ or the decimal 0.25
3. $\frac{3}{4} = \frac{75}{100}$ or the decimal 0.75
4. $2\frac{3}{5} = 2\frac{6}{10}$ or the decimal 2.6

Match each fraction with its equivalent decimal.

$4\frac{1}{4}$	4.4
$4\frac{7}{10}$	4.25
$4\frac{2}{5}$	4.75
$4\frac{3}{4}$	4.7

$2\frac{1}{2}$	2.25
$2\frac{1}{4}$	2.2
$2\frac{1}{5}$	2.8
$2\frac{4}{5}$	2.5

Write a decimal that is equivalent. Do you see a pattern?

Fraction	Decimal
$\frac{1}{4} =$	0.25
$\frac{2}{4} =$	0.50
$\frac{3}{4} =$	0.75

Fraction	Decimal
$\frac{1}{5} =$	0.2
$\frac{2}{5} =$	0.4
$\frac{3}{5} =$	0.6
$\frac{4}{5} =$	0.8

5, 0.5

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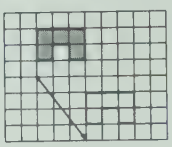
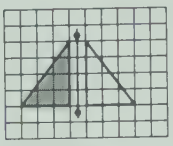
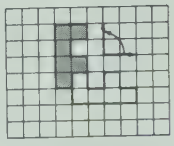
Identifying Slides, Flips, and Turns



The slide arrow shows the direction and distance.

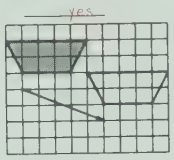


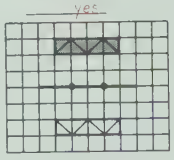
Flip the shape using the points on the flip line.

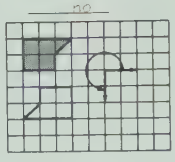


The turn angle shows how much a shape turns about the turn centre.

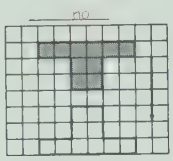
1. Is the light shape the slide image of the dark shape for the slide arrow shown?
2. Is the light shape the flip image of the dark shape for the flip line shown?
3. Is the light shape the turn image of the dark shape for the turn angle shown?

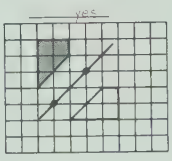


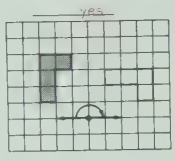




4. Is the light shape the slide image of the dark shape for the slide arrow shown?
5. Is the light shape the flip image of the dark shape for the flip line shown?
6. Is the light shape the turn image of the dark shape for the turn angle shown?







Yes

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Writing Equivalent Ratios

Mark ran 3 km in 45 min. His ratio of distance to time is 3:45. Read this 3 to 45.

Ingrid ran 1 km in 15 min. Her ratio of distance to time is 1:15. Read this 1 to 15.

To find an equivalent ratio, multiply or divide the numerator and denominator by the same number.

$\frac{1}{15} = \frac{1 \times 3}{15 \times 3} = \frac{3}{45}$

The ratios of 1:15 and 3:45 are equivalent.

Complete. Use patterns or multiplication.

1. $\frac{1}{4} = \frac{2}{8} = \frac{3}{12} = \frac{4}{16} = \frac{5}{20}$
2. $\frac{3}{5} = \frac{6}{10} = \frac{9}{15} = \frac{12}{20} = \frac{15}{25}$
3. $\frac{6}{7} = \frac{12}{14} = \frac{18}{21} = \frac{24}{28} = \frac{30}{35}$
4. $\frac{8}{2} = \frac{16}{4} = \frac{24}{6} = \frac{32}{8} = \frac{40}{10}$

Complete these ratio tables.

5.

shoes	2	4	6	8	10
pairs	1	2	3	4	5

6.

kilograms	1	2	3	4	5
grams	1000	2000	3000	4000	5000

7.

octopus	1	2	3	4	5
legs	8	16	24	32	40

8.

eggs	12	24	36	48	60
dozen	1	2	3	4	5

Match the pictures that show equivalent ratios.

$\frac{3}{12}, \frac{4}{16}, \frac{5}{20}$ $\frac{2}{4}, \frac{3}{6}, \frac{4}{8}, \frac{5}{10}$

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Finding the Missing Term in Equivalent Ratios

Colette is selling lemonade. She needs 7 lemons to make 3 L of lemonade. How many lemons does she need to make 12 L of lemonade?

Write.	Think.	Multiply.
$\frac{7}{3} = \frac{}{12}$	$\frac{7}{3} = \frac{}{12}$ $3 \times ? = 12$ $3 \times 4 = 12$	$\frac{7}{3} = \frac{7 \times 4}{} = \frac{28}{12}$

Sometimes you divide to find the missing term.

Write.	Think.	Divide.
$\frac{15}{20} = \frac{3}{}$	$\frac{15}{20}$ $15 \div ? = 3$ $15 \div 5 = 3$ $\frac{3}{}$	$\frac{15}{20} = \frac{3}{4}$ $20 \div 5$

Complete. Cross out the digits of each answer in the strip. If you do the problems correctly, you will cross out every digit.

1. $\frac{3}{4} = \frac{15}{20}$
2. $\frac{2}{5} = \frac{12}{30}$
3. $\frac{4}{8} = \frac{1}{2}$
4. $\frac{5}{15} = \frac{1}{3}$
5. $\frac{1}{3} = \frac{7}{21}$
6. $\frac{4}{4} = \frac{60}{60}$
7. $\frac{3}{2} = \frac{9}{6}$
8. $\frac{24}{6} = \frac{8}{2}$
9. $\frac{8}{7} = \frac{16}{14}$

0	0	1	1	1	3	3	4	5	6	6	7	8

Solve.

10. Colette is also selling cookies. She charges 25¢ for 2 cookies. How much does she charge for 6 cookies?

    75¢

11. Colette can fill 12 glasses with 2 L of lemonade. How many glasses can she fill with 8 L of lemonade?

    48

15 3 6

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Finding the Information Needed

Answers will vary

How would you find this information?

1. the population of your city, town, or country

   call town office

2. the total precipitation in your area last year

   call weather bureau

3. the world high-jump record

   use an almanac

4. the Olympic shot-put record

   use an almanac

5. the distance around your schoolroom

   measure

6. the air distance from Montreal to Winnipeg

   use a map

7. the favorite song of your class

   take a survey

8. the total number of students in your school

   ask at the school office

9. the NHL player with the greatest number of career goals

   call the sports editor at a newspaper

10. the average mass of a full-grown African bull elephant

    use an encyclopedia

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How Well Do You See?

In each row, check the figure that is different.

1.

2.

3.

4.

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Missing Information

Check the fact you need. Then solve the problem.

	Facts
1. There are 2 fifth-grade classrooms. One has 32 students. How many fifth graders are there in all? 60	a. There are 13 teachers in the school. b. The first grade has 68 children. ✓ c. The other fifth-grade class has 28 students.
2. Mrs. Rowan works part-time. Last week she worked 28 h. How much did she earn? $245.00	a. She sold 135 pairs of shoes. ✓ b. She makes $8.75 in one hour. c. She spent $4.50 for lunch.
3. Earle used 3 rolls of film on his trip. How many pictures did he take? 72	a. Each roll has 24 pictures. b. It cost $15.00 for developing. c. His album has 36 pages.
4. Astrid is going on holidays with her family. They are leaving in 3 weeks. Astrid has been saving her money to buy souvenirs. How much more does she need to have $30.00? $5.70	a. Her family is going to the Maritimes. b. They are going for 3 weeks. c. She has $24.30 now.
5. Dino wants to buy a 10-speed bike that costs $105.95. How much more does he need? $24.65	a. There is another bike for $98.20. b. His mother's bike has 5 speeds. ✓ c. He has $81.30.

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Finding the Number of Possibilities

1. There are four marbles in a bag. There is one of each color—red, green, blue, and yellow. How many different ways of picking them one at a time are possible?

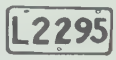
   24 (4 × 3 × 2 × 1)

2. This type of combination lock has six numerals on it. To open the lock requires three moves—right, left, right. For example, one combination is right to 3, left to 0, right to 5. How many different combinations are possible?

   216 (6 × 6 × 6)

3. Some licence plates have five characters. If the first one must be a letter and the others must be digits, how many combinations are possible? Give your answer as a product, for example, 21 × 9 × 3.

   26 × 10 × 10 × 10 × 10



4. How many different combinations of four playing cards can be dealt from a full deck of 52? Hint: How many choices are there for the first card? Give your answer as a product.

   52 × 51 × 50 × 49

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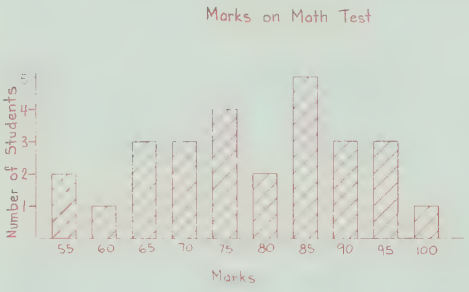
Organizing and Displaying Information

1. The marks from a math test are given. Organize the marks and show the information on a bar graph.

75	95	80	75	90	55	85
95	80	90	85	85	65	70
75	90	65	65	70	75	95
100	85	70	100	55	60	85



2. How many students took the test? 28
3. What was the most common mark? 85
4. Do you think the test was hard? no Answers will vary
5. How many problems were on the test? 20

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Giving the Most Reasonable Answer

Sumi has 23¢. She wants to share it with her 3 sisters. How much will each girl receive?

$4\overline{)23}$ R3 (5; 20; 3)

Each girl will receive 5¢. There will be 3¢ left.

Chester has 23 h to spend on 4 equally important projects. How much time can he spend on each?

$4\overline{)23}$ R3 (5; 20; 3)

3 out of 4 remaining → $\frac{3}{4}$

He can spend $5\frac{3}{4}$ h on each project.

23 people are going on a trip. If a car seats 4 people, how many cars are needed?

$4\overline{)23}$ R3 → 6 (5; 20; 3)

6 cars are needed.

Give the most reasonable answer.

1. Four girls helped clean the garage. They were given a box of 27 records to share. How many did each receive?

   6, 3 left

2. One hundred fifty-three people are going on a bus trip. Each bus holds 46 people. How many buses are needed?

   4

3. Jan and Lucille have 3 oranges to share. How many will each receive?

   $1\frac{1}{2}$

4. Marge's uncle gave her a box of 29 foreign stamps to share with her brother. How many stamps will each receive?

   14, 1 left

5. Mrs. Burton is putting 162 books on the shelves. Each shelf holds 35 books. How many shelves will she use?

   5

6. Louie has 10 cookies. He is going to share them with 3 friends. How many will each receive?

   $2\frac{1}{2}$

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Organizing Information

There are 12 people at a meeting. If every person shakes hands with every other person, how many handshakes will there be? Hint: Draw diagrams, make a table, and start with simpler problems.

66

People	Handshakes
2	1
3	3
4	6
5	10
6	15
12	66

NAME

SPM 5 Masters
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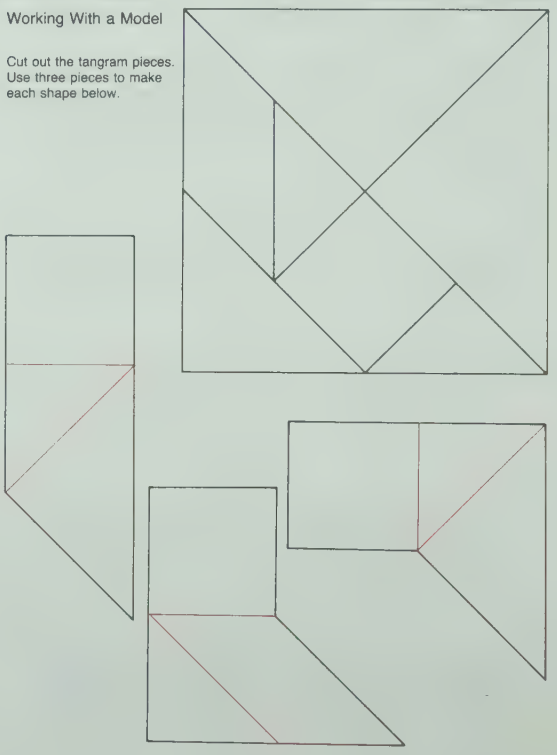
72

Working With a Model

Cut out the tangram pieces. Use three pieces to make each shape below.



NAME

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73

Writing Equations

Write an equation for each problem. Answer all questions. Equations will vary

1. Six times a number equals 36. What is the number?

   6 x n = 36 ; n=6

2. Fourteen plus a number equals 27.

   14 + n = 27

3. The product of 9 and some number is 27.

   9 x n = 27

4. The sum of 79 and some number is 142.

   79 + n = 142

5. The quotient of a number dividend by 7 is 9.

   n ÷ 7 = 9

6. The sum of 3, 4, and 5 is what number?

   3+4+5 = n , n= 12

7. How much greater is 72 than 51?

   72 - 51 = n ; n= 21

8. Mary's age plus 3 equals John's age. Who is older?

   m+3 = j , John

9. Phil has 8 fish in his tank. Pat has 3 more fish than Phil. How many fish does Pat have?

   8+3 = p , p=11

10. Anne has 6 tomato plants in her garden. Each plant has 10 green tomatoes. How many tomatoes are there in all?

    6 x 10 = n ; n=60

NAME

SPM 5 Masters
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74

Solving Problems in Two or More Steps

Prices (in dollars)

GLASSINE ENVELOPES				STAMP HINGES (1000)		
Size	100	200	500	1 package	12 packages	50 packages
1	1.40	2.60	5.25	0.95	10.50	40.50
2	1.60	2.90	6.00	STAMP TONGS		
3	1.75	3.15	6.50	#901	3.15 each pair	3 pairs for 8.80
4	2.05	3.70	7.25	#903	2.10 each pair	3 pairs for 5.85

Add $2.00 postage for orders under $25.00, $3.00 for orders $25.00 or more.

The chart shows the pieces for some of the items stamp collectors use. Find the total amount of each order.

1. 200 glassines, size 3
   5 packages of hinges
   1 pair of #903 tongs

   $12.00

2. 100 glassines, size 4
   200 glassines, size 1
   3 packages of hinges

   $9.50

3. 3 pairs 903 tongs
   500 glassines, size 4
   100 glassines, size 1

   $16.50

4. 12 packages of hinges
   3 pairs of #901 tongs
   100 glassines, size 4
   100 glassines, size 2

   $24.95

NAME

SPM 5 Masters
Follows page 214

75

Solving Equations

Write and solve an equation for each exercise. Equations will vary

1. A number plus 6 equals 14.

   n + 6 = 14 , n=8

2. The product of 5 and a number is 30.

   5 x n = 30 , n=6

3. The sum of 17 and some number is 62.

   17 + n = 62 , n= 45

4. What is the quotient of 56 divided by 7?

   56 ÷ 7 = n , n=8

5. A number times 9 is 81.

   n x 9 = 81 , n= 9

6. The taxi company has 31 cars. Fourteen of them are at the airport. How many are not at the airport?

   31 - 14 = n , n=17

7. Roberta drove her taxi to the garage for gas. The tank holds 51 L. It took 39 L to fill it. How many litres were in the tank before the fill-up?

   51 - 39 = n ; n=12
   12 L

8. If Sam had $12 more, he could buy a bicycle costing $89.95. How much money does he have?

   89.95 - 12 = n ; n= 77.95
   $77.95

NAME

SPM 5 Masters
Follows page 233

76

Skills Practice

Solve each problem.

1. Sunday morning, Frank made breakfast for his family. He cooked 2 eggs for each of 5 people, and 10 slices of bacon. He also made 8 pieces of toast. How many eggs did he use?

   10

2. After breakfast, Frank's brother washed 10 plates, 5 glasses, and 1 frying pan. He also washed 12 forks, 7 knives, and 3 spoons. How many pieces of cutlery did he wash?

   22

3. If you have $■ and earn $▲ more, how much money do you have? Circle the operation you would use.

   (+) − × ÷

4. Kathy has 13 foreign dolls in her collection. How many more does Karin have?

   do not have enough information to solve

5. Complete the table.

1	2	3	5	9	13	15	17	24	34
3	5	7	11	19	27	31	35	49	69

6. You have 3 coins in your pocket—pennies, nickels, or dimes. How much money might you have? Make a table.

1¢	5¢	10¢	Amount
1	1	1	16¢
3	0	0	3¢
2	1	0	7¢
2	0	1	12¢
1	2	0	11¢
1	0	2	21¢
0	3	0	15¢
0	2	1	20¢
0	1	2	25¢
0	0	3	30¢

NAME

SPM 5 Masters
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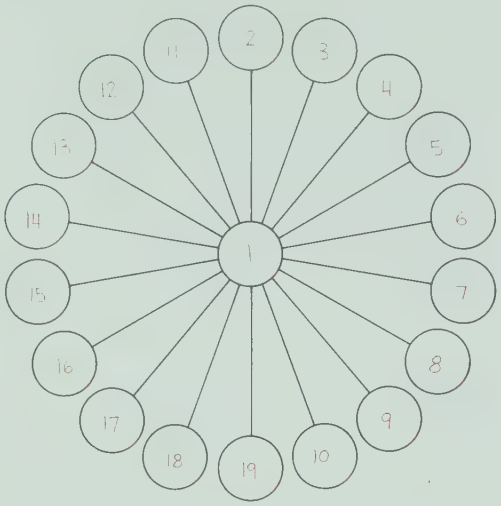
77

Logical Thinking

Put the numerals 1 to 19 in the 19 circles so that the sums of any three numbers in a row are equal.

other possibilities
centre 19, sum 38
centre 10, sum 30



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78

Choosing the Information Needed

Circus Ticket Prices (in dollars)

Row	1-20	21-40	41-60	61 +
Adult	10.50	8.60	7.50	5.50
Child (under 12)	8.00	6.00	5.00	3.75
Students (12 and over)	1.50 off adult price			

1. Mrs. Brown bought tickets in row 44 for herself, her 13-year-old daughter, and her 10-year-old son. How much were the tickets?

   $18.50

2. Mr. and Mrs. Walter, their 6-year-old twins, and their 8-year-old son have seats in row 27. How much did the tickets cost?

   $35.20

3. A group of 12 high-school students and 2 parents bought tickets in row 18. How much did the tickets cost?

   $129.00

4. Mr. and Mrs. Costa are taking their daughter Jane and 3 of her classmates to the circus. It is a party for Jane's ninth birthday. They have seats in row 44. How much did they pay?

   $35.00

5. Make up a problem of your own and solve it.

NAME

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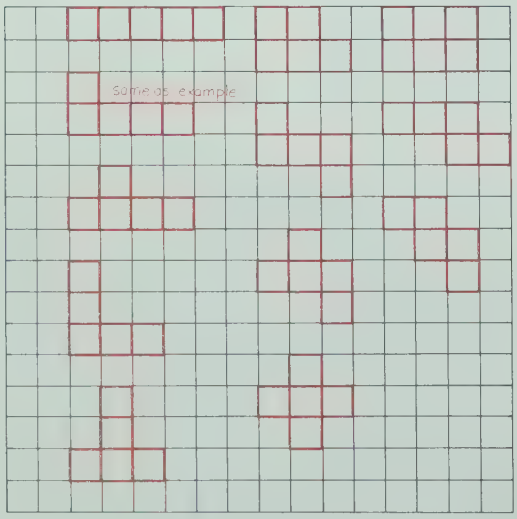
79

Working with Models

A shape made of five squares like this is a **pentomino.**

Draw as many different pentominos as you can.
The two above are the same.



NAME

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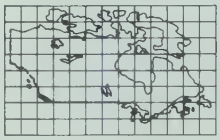
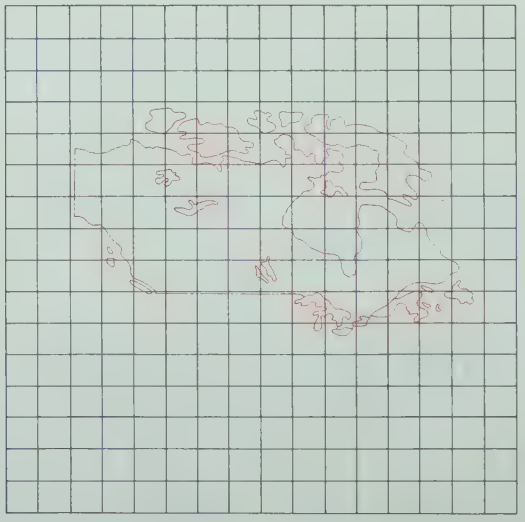
80

Scale Drawing

Enlarge the drawing here onto the grid below.



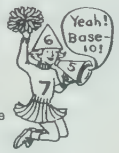


What is the ratio of the area of the large drawing to the small drawing? 4 to 1

NAME

SPM 5 Masters With Unit 1 — 81

Number Systems



Our number system is a **base-ten** system.

A base-ten place-value chart looks like this.

10 × 10 × 10 thousands	10 × 10 hundreds	10 tens	1 ones
		1	1
	1	1	0

11 means 1 ten + 1 one
or 10 + 1 = 11

110 means
1 hundred + 1 ten + 0 ones
or 100 + 10 + 0 = 110

The binary system is a **base-two** system.

A base-two place-value chart looks like this.

2 × 2 × 2 eights	2 × 2 fours	2 twos	1 ones
		1	1
	1	1	0

11 means 1 two + 1 one
or 2 + 1 = 3

110 means
1 four + 1 two + 0 ones
or 4 + 2 + 0 = 6

What do these binary numbers equal in our base-ten system?

Binary Place-Value					Number in Our Base-Ten System
eights	fours	twos	ones		
			1	=	1
		1	0	=	2
		1	1	=	3
	1	0	0	=	4
	1	0	1	=	5
	1	1	0	=	6
	1	1	1	=	7
1	0	0	0	=	8
1	0	0	1	=	9
1	0	1	0	=	10

NAME

SPM 5 Masters With Unit 2 — 82

Number Games

Arrange the given digits to make numbers that have the **greatest** possible sum or difference.

1. 1, 2, 3, 4, 5, 6

6 4 2
+ 5 3 1
1 1 7 3

2. 9, 8, 7, 6, 4, 2, 1, 0

9 7 4 1
+ 8 6 2 0
1 8 3 6 1

3. 8, 8, 7, 7, 5, 4, 3, 0

8 8 7 7
− 3 0 4 5
5 8 3 2

4. 8, 5, 4, 2, 1, 1, 0, 0

8 5 4 2
− 1 0 0 1
7 5 4 1

Arrange the given digits to make numbers that have the **smallest** possible sum or difference.

5. 1, 2, 3, 4, 5, 6

1 3 5
+ 2 4 6
3 8 1

6. 9, 8, 7, 6, 4, 2, 1, 0

1 0 6 8
+ 2 4 7 9
3 5 4 7

7. 8, 8, 7, 7, 5, 4, 3, 0

8 7 5 0
− 8 7 4 3
7

8. 8, 5, 4, 2, 1, 1, 0, 0

1 0 5 2
− 1 0 4 8
4

NAME

SPM 5 Masters With Unit 3 — 83

Multiplication Triangles

Complete the triangles. Each number is the product of the two numbers underneath it.

1.

	9000		
	150	60	
15	10	6	
3	5	2	3

2.

	192 000		
	240	800	
12	20	40	
3	4	5	8

3.

	4374		
	27	162	
3	9	18	
3	1	9	2

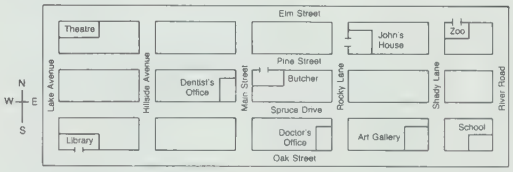
4.

	1536		
	96	16	
12	8	2	
3	4	2	1

NAME

SPM 5 Masters With Unit 4 — 84

Directions on a Map



Use the street map to answer the questions.

1. Turn left as you leave the zoo. Go to the corner. Then walk 1 block south, 1 block west, and 2 blocks south. Where are you?

Doctor's office

2. As you leave the library, turn right. Go to the corner. Walk 2 blocks north. Turn right, walk 3 blocks east, 1 block south, and 1 block west. Where are you?

Dentist's office

3. As you leave the butcher shop, turn right. Go to the corner. Walk 1 block south, then 2 blocks east. Turn right and walk 1 block. Then walk west for 1 block. Where are you?

Art Gallery

4. As you leave John's house, turn left. Walk 2 blocks south. Then walk east for 2 blocks. Where are you?

School

5. Write directions for the most direct route to the theatre from John's house.

As you leave John's house, turn right. Go to the corner. Walk 3 blocks west

6. Write directions for the most direct route from the library to the zoo.

As you leave the library, turn left. Go to the corner. Walk 3 blocks north. Then walk 4 blocks east

NAME

SPM 5 Masters With Unit 5 85

Division Logic

Solve.

There are fewer than 15 marbles in the bag.

When 5 children divide them evenly, 3 marbles are left over.

When 3 children divide them evenly, 1 marble is left over.

How many marbles are in the bag?

13

There are fewer than 30 marbles in this bag.

When 4 children divide them evenly, 3 marbles are left over.

When 5 children divide them evenly, 3 marbles are left over.

How many marbles are in the bag?

23

There are fewer than 50 apples in this basket.

When 9 children divide them equally, 1 apple is left over.

When 8 children divide them equally, 6 apples are left over.

How many apples are in the basket?

46

There are fewer than 50 apples in this basket.

When 6 children divide them equally, 1 apple is left over.

When 7 children divide them equally, 2 apples are left over.

How many apples are in the basket?

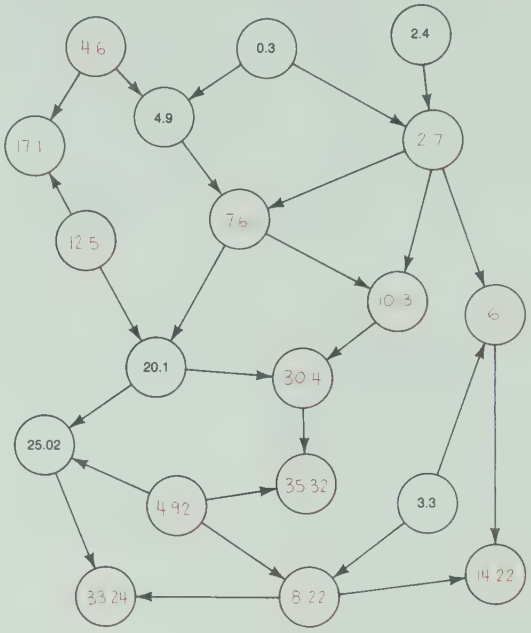
37

NAME

SPM 5 Masters With Unit 6 86

Decimal Puzzle

Complete the puzzle. Add the two numbers in the circles whose arrows point to the same empty circle. Hint: Sometimes you are given the sum and must subtract to find one of the addends.



NAME

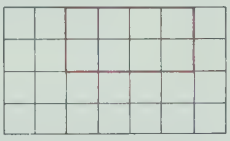
SPM 5 Masters With Unit 7 87

Area and Perimeter

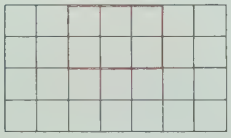
Each square is one square centimetre.

Draw a square with a perimeter of 12 cm.

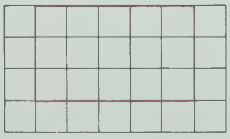
Draw a rectangle with a perimeter of 12 cm and an area of 8 cm².



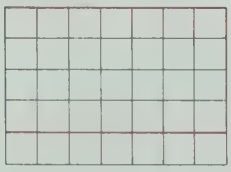
Draw a rectangle with a perimeter of 10 cm and an area of 6 cm².



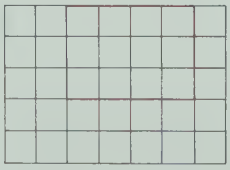
Draw a rectangle with an area of 18 cm². One side must be twice as long as the other side.



Draw a rectangle with a perimeter of 22 cm. One side must be 3 cm longer than the other.



Draw a rectangle with an area of 12 cm² and a perimeter of 14 cm.

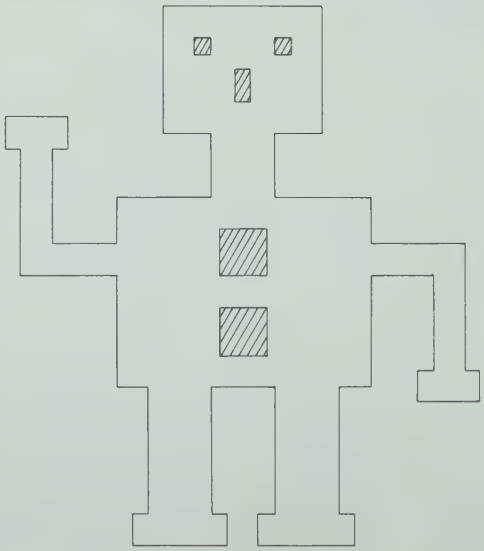


NAME

SPM 5 Masters With Unit 7 88

Measurement and Area

Use a centimetre ruler to measure the length of each part of the robot. Then, find the total area of the unshaded part of the robot.



The total area of the unshaded part of the robot is 104.5 cm².

NAME

SPM 5 Masters With Unit 8 — 89

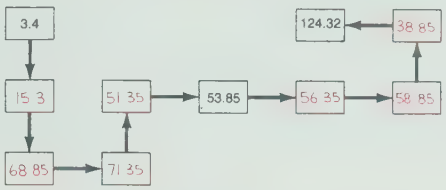
Arithmetic Puzzles

Complete the puzzles. Follow the directions shown by the arrows.

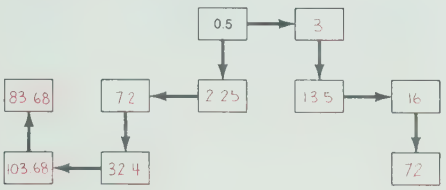
→ add 2.5
↓ multiply by 4.5
← multiply by 3.2
↑ subtract 20

1.

2.



3.

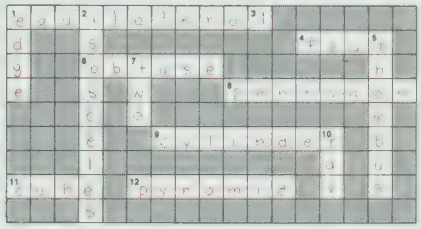


NAME

SPM 5 Masters With Unit 9 — 90

Geometry Crossword Puzzle

Complete the crossword puzzle.



Across

1. a triangle with 3 sides the same length
4. number of sides in a quadrilateral
6. an angle that measures more than 90° but less than 180°
8. a polygon with 5 sides
9. this shape
11. a prism whose six faces are squares
12. a triangular

Down

1. the line segment where two faces of a solid meet
2. a triangle with 2 sides the same length
3. a set of points that continue in 2 directions without end
5. a parallelogram with all 4 sides equal in length
7. number of lines of symmetry in this figure
10. this figure

NAME

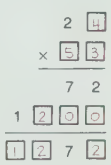
SPM 5 Masters With Unit 10 — 91

Missing Digits

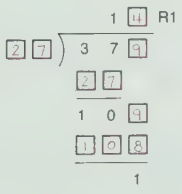
Write the correct digit in each box to complete the problems.

1.

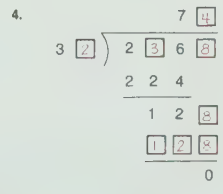
2.



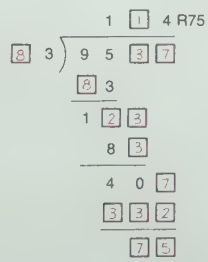
3.



4.



5.



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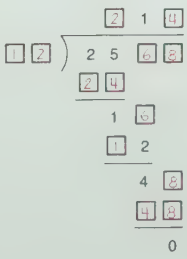


NAME

SPM 5 Masters With Unit 11 — 92

Polyhedron

A regular polyhedron is a solid with faces in the shape of regular polygons. All the faces are congruent.

The simplest regular polyhedron is the regular tetrahedron.

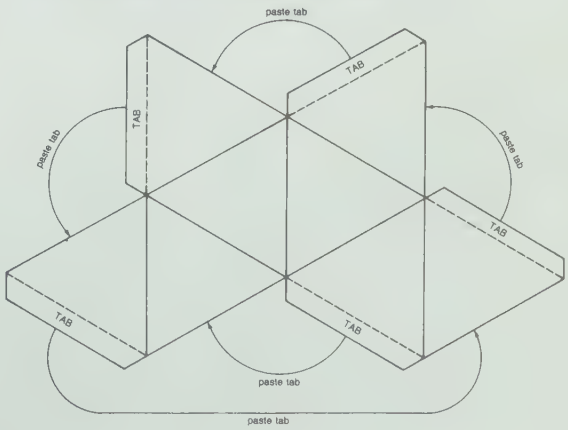
It has 4 equilateral triangles for faces.

Another polyhedron is the regular octahedron.

It has 8 equilateral triangles for faces.

Follow the directions to make a regular octahedron.

Cut out the pattern. Fold on all the solid and dotted lines. Then, glue or tape each flap to the adjoining edge as shown.

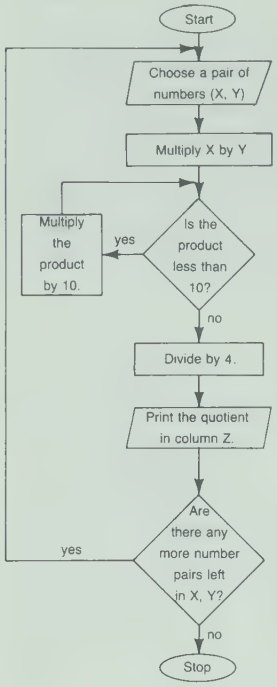


NAME

SPM 5 Masters With Unit 12 93

Decimal Flow Chart

Fill in column Z by following the flow chart.



X	Y	Z
2	5	2.5
0.02	0.05	2.5
3	4	3
0.3	0.4	3
4	5	5
0.04	0.05	5
5	6	7.5
0.5	0.6	7.5

NAME

SPM 5 Masters With Unit 13 94

Probability

There are 8 marbles in this jar.

5 of them are red.
3 of them are white.

You must choose ■ marble without looking.

The **probability** that you will pick a red marble is 5 out of 8, or $\frac{5}{8}$.

The **probability** that you will pick a white marble is 3 out of 8, or $\frac{3}{8}$.

Find the probability for each event. Write each answer as a fraction.

John has 10 socks in his drawer. 6 of them are gray. 4 of them are white. He picks ■ sock without looking.

1. What is the probability John picks a gray sock? $\frac{6}{10} = \frac{3}{5}$
2. What is the probability John picks a white sock? $\frac{4}{10} = \frac{2}{5}$
3. What is the probability John picks a red sock? $\frac{0}{10} = 0$

Lisa has 9 socks in her drawer. Some of them are red. The rest are blue. If Lisa picks one sock without looking, the probability of its being a red sock is $\frac{4}{9}$.

4. How many red socks are in Lisa's drawer? 4
5. How many blue socks are in Lisa's drawer? 5

NAME

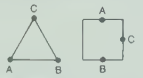
SPM 5 Masters With Unit 14 95

Topology

Topology is a branch of mathematics that deals with the stretching and bending of figures.

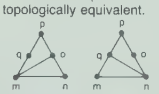
Shapes are topologically equivalent if they can be stretched or molded into the same shape without changing the order of the points or disconnecting any points in the figure.

These two shapes are topologically equivalent.



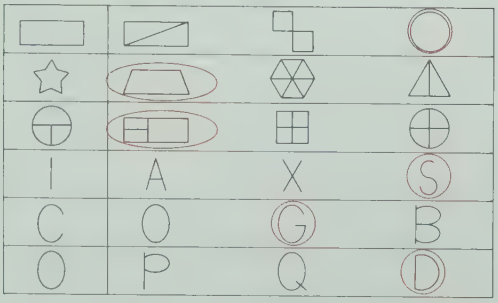
The first figure can be stretched into the second figure without changing the order of the points.

These two shapes are not topologically equivalent.



In the second figure, points m and o are no longer connected.

Circle the figure that is topologically equivalent to the first figure in each row.



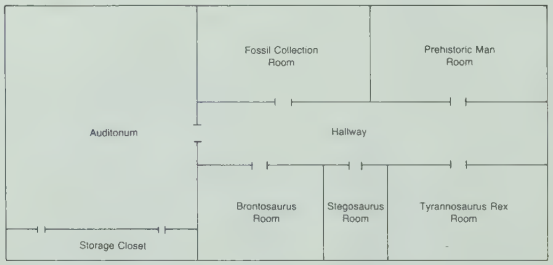
NAME

SPM 5 Masters With Unit 15 96

Scale Drawing

This is ■ **scale drawing** of one floor of a museum.
The scale is 1 cm to 4 m.
1 cm in the drawing means 4 m in the actual room.

SCALE 1 cm = 4 m



Use a centimetre ruler to measure the rooms in the scale drawing. Then, use the scale to answer the questions.

1. What is the length of the hallway? 44 m
2. What is the width of the auditorium? 24 m
3. What is the width and length of the storage closet? 4 m by 24 m
4. What is the width and length of the fossil room? 12 m by 22 m
5. What is the area of the fossil room? 264 m^2
6. What is the area of the prehistoric man room? 264 m^2
7. What is the total area of the 3 dinosaur rooms? 528 m^2
8. How much more room is given to display Tyrannosaurus than to Brontosaurus?
   48 m^2

Numbers to 999 999

Study the chart.

Standard number	Expanded form	thousands					
		h	t	o	h	t	o
304	300 + 4				3	0	4
480	400 + 80				4	8	0
2845	2000 + 800 + 40 + 5			2	8	4	5
13 063	10 000 + 3000 + 60 + 3		1	3	0	6	3
230 030	200 000 + 30 000 + 30	2	3	0	0	3	0

What does each 6 mean?

1. 694 _____ **2.** 6704 _____

3. 5436 _____ **4.** 65 045 _____

5. 16 743 _____ **6.** 635 481 _____

Write each in expanded form.

7. 435 _____ **8.** 308 _____

9. 3490 _____ **10.** 4000 _____

11. 75 000 _____ **12.** 67 008 _____

Write each in standard form.

13. 7 hundred forty _____ **14.** 6 thousand 3 hundred 5 _____

15. 3 thousand 90 _____ **16.** 12 thousand 9 hundred twenty _____

17. 340 thousand 45 _____ **18.** 468 thousand seven _____

Create a Number.

Use each digit below only once for each question.

3	0	8	4	0	2

19. What is the greatest number you can make? _____

20. What is the smallest number you can make? _____

400 + 30 + 5

6 hundreds

740

Comparing and Ordering Numbers

Which is greater, 435 798 or 437 231?

Compare each digit.

thousands					
h	t	o	h	t	o
4	3	5	7	9	8
4	3	7	2	3	1

same

same

7 thousands > 5 thousands
so, 437 231 > 435 798

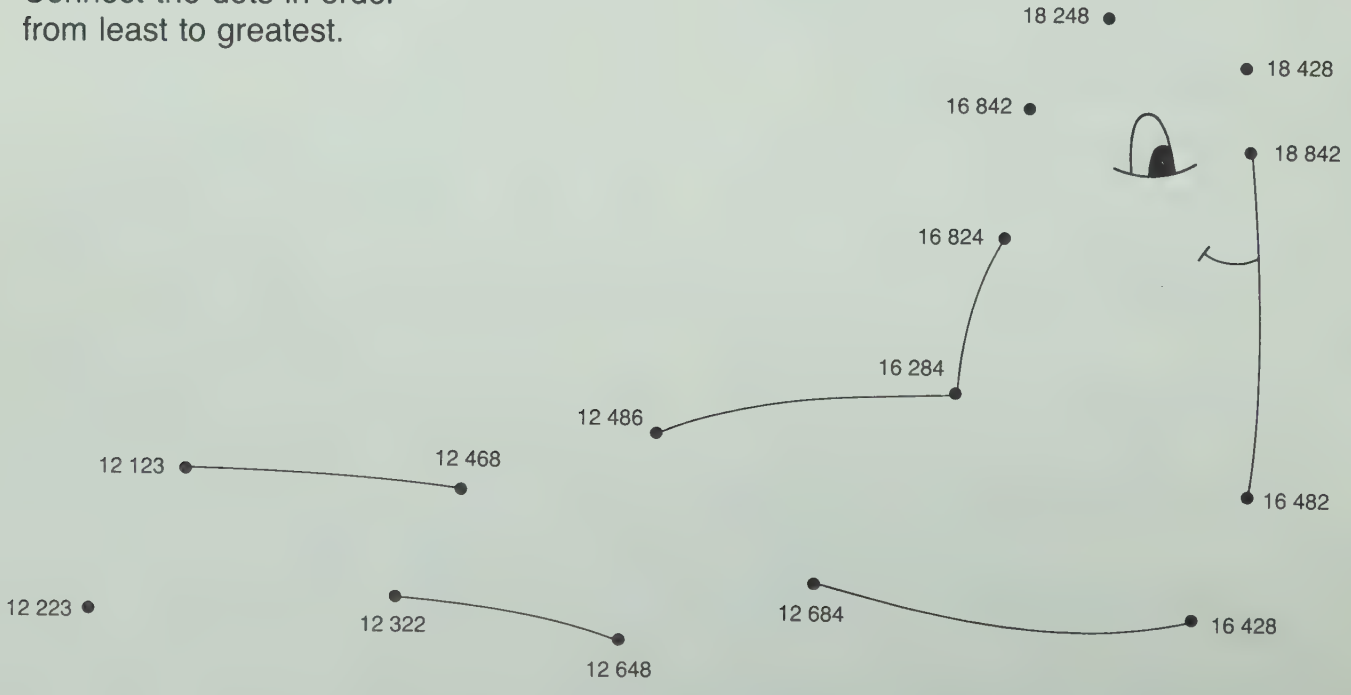
Use >, <, or = to make true statements.

1. 47 859 ____ 47 869 **2.** 56 358 ____ 54 358 **3.** 24 938 ____ 24 948

4. 16 342 ____ 16 432 **5.** 49 323 ____ 48 324 **6.** 354 268 ____ 354 268

7. 235 438 ____ 235 483 **8.** 459 386 ____ 449 386

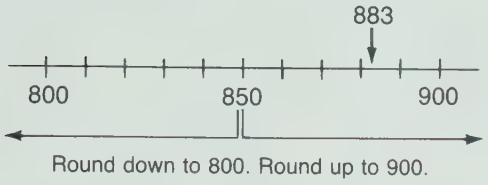
Connect the dots in order from least to greatest.



> ⚀ > ⚄ > ⚅

Rounding to the Nearest 10, 100

Round 883 to the nearest hundred.



883 rounded to the nearest 100 is 900.

When rounding to a certain place value, check the digit to its right.
Round up if the digit is 5 or greater.
Round down if the digit is less than 5.

Round to the nearest ten and to the nearest hundred.

		ten	hundred
1.	354		
2.	268		
3.	192		
4.	935		
5.	3288		
6.	5554		
7.	7726		
8.	4999		

Tick-Tack-Toe

Round the numbers to the nearest ten. Then mark the row in which all the answers are the same.

828	815	821
822	825	815
818	825	834

Rounding to the Nearest 1000, 10 000

Study the chart.

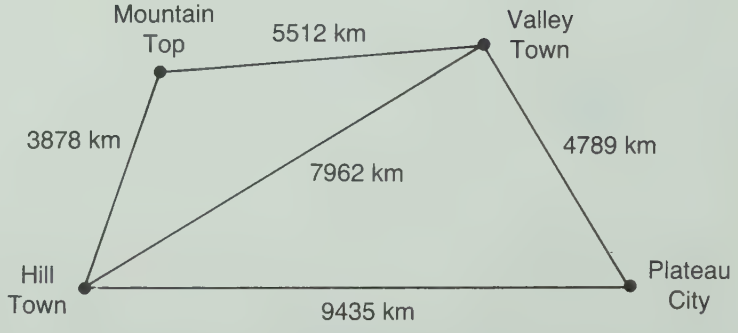
Number	Round to this place value.	What is the digit to its right?	Is the digit 5 or greater than 5?	Do you round up or down?	Rounded number
82 567	thousand	5	yes	up	83 000
82 567	ten thousand	2	no	down	80 000
235 468	thousand	4	no	down	235 000
235 468	ten thousand	5	yes	up	240 000

Round to the nearest:

		thousand	ten thousand
1.	34 525		
2.	78 477		
3.	89 648		
4.	895 345		
5.	421 896		

Rounding Distances

Round the numbers on the map to thousands. Then complete the sentences below.



6. It is about 4000 km from _____ to _____ .

7. It is about 5000 km from _____ to _____ .

8. It is about 6000 km from _____ to _____ .

9. It is about 8000 km from _____ to _____ .

10. It is about 9000 km from _____ to _____ .

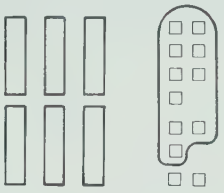
Hill Town, Mountain Top 35 000, 30 000 895 000, 900 000

Adding Two- and Three-Digit Numbers

Add 27 and 35.

Add the ones.

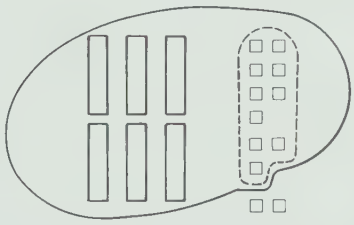
$$\begin{array}{r} {\scriptstyle 1} \\ 37 \\ +\,35 \\ \hline 2 \end{array}$$



Regroup 12 ones as
1 ten 2 ones

Add the tens.

$$\begin{array}{r} {\scriptstyle 1} \\ 37 \\ +\,35 \\ \hline 72 \end{array}$$



Add.

1. 43 + 54

2. 33 + 23

3. 46 + 32

4. 24 + 72

5. 18 + 81

6. 18 + 42

7. 35 + 46

8. 48 + 27

9. 24 + 59

10. 73 + 19

11. 23 + 42 + 34

12. 12 + 51 + 22

13. 32 + 47 + 18

14. 15 + 29 + 40

15. 12 + 35 + 43

16. 62 + 35 = _____

17. 24 + 38 = _____

18. 49 + 18 = _____

19. 14 + 13 + 12 = _____

20. 23 + 37 + 19 = _____

Decoding Time

Here is a code.

30	44	48	64	73	97
M	O	E	N	T	D

Add. What is the name of the city?

29 + 19	63 + 34	14 + 16	29 + 15	45 + 19	25 + 48	23 + 21	38 + 26

Addition with Regrouping

On Saturday the movie theatre sold 789 tickets. On Sunday 534 tickets were sold. How many tickets were sold on the weekend?

Add the ones.

$$\begin{array}{r} {\scriptstyle 1} \\ 789 \\ +\,534 \\ \hline 3 \end{array}$$

Regroup 13 ones as 1 ten 3 ones.

Add the tens.

$$\begin{array}{r} {\scriptstyle 11} \\ 789 \\ +\,534 \\ \hline 23 \end{array}$$

Regroup 12 tens as 1 hundred 2 tens.

Add the hundreds.

$$\begin{array}{r} {\scriptstyle 11} \\ 789 \\ +\,534 \\ \hline 1323 \end{array}$$

Regroup 13 hundreds as 1 thousand 3 hundreds.

1323 tickets were sold on the weekend.

Add.

1. $\begin{array}{r} 156 \\ +\,237 \\ \hline \end{array}$ **2.** $\begin{array}{r} 384 \\ +\,192 \\ \hline \end{array}$ **3.** $\begin{array}{r} 564 \\ +\,243 \\ \hline \end{array}$ **4.** $\begin{array}{r} 569 \\ +\,213 \\ \hline \end{array}$ **5.** $\begin{array}{r} 732 \\ +\,186 \\ \hline \end{array}$

6. $\begin{array}{r} 254 \\ +\,238 \\ \hline \end{array}$ **7.** $\begin{array}{r} 468 \\ +\,512 \\ \hline \end{array}$ **8.** $\begin{array}{r} 726 \\ +\,194 \\ \hline \end{array}$ **9.** $\begin{array}{r} 334 \\ +\,487 \\ \hline \end{array}$ **10.** $\begin{array}{r} 148 \\ +\,256 \\ \hline \end{array}$

Solve.

11. One Saturday the snack bar at the movie theatre sold 156 boxes of popcorn at the matinée. 215 boxes were sold at the evening show. How many boxes of popcorn were sold altogether? _____

Special Sum

Add across and down. Then find the "special sum" for the corner box.

12.

+ → / ↓			
	272	326	
	139	234	

13.

+ → / ↓			
	125	387	
	186	273	

14.

+ → / ↓			
	151	452	
	174	194	

393 492 371

Addition and Subtraction

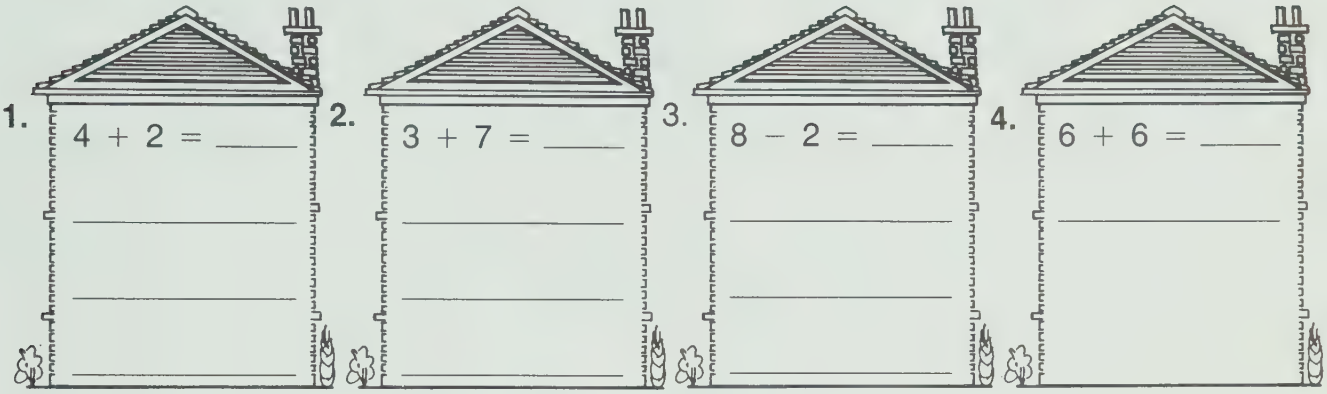
Related Numbers

2 3 5

Family of Facts

$2 + 3 = 5$
$3 + 2 = 5$
$5 - 2 = 3$
$5 - 3 = 2$

Write the complete family.



1. $4 + 2 =$ _____

2. $3 + 7 =$ _____

3. $8 - 2 =$ _____

4. $6 + 6 =$ _____

Add or subtract.

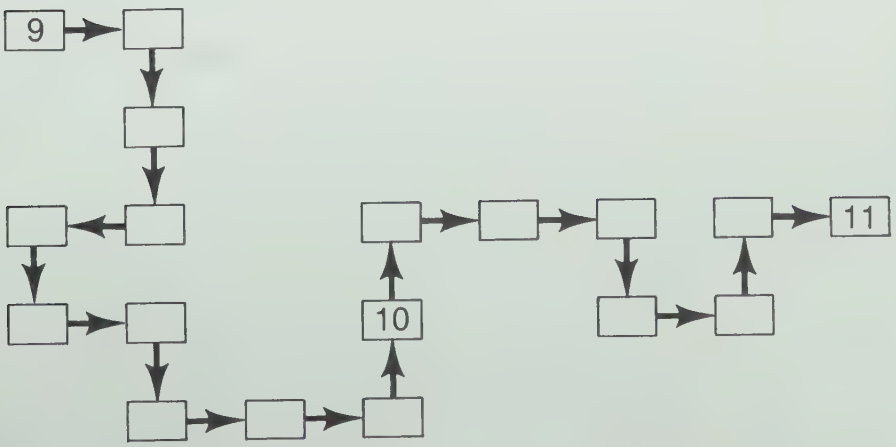
5. $6 + 5 =$ _____ **6.** $8 - 3 =$ _____ **7.** $4 + 9 =$ _____ **8.** $11 - 4 =$ _____

9. $5 + 8 =$ _____ **10.** $18 - 9 =$ _____ **11.** $13 - 7 =$ _____ **12.** $4 + 9 =$ _____

13. $17 - 8 =$ _____ **14.** $15 - 7 =$ _____ **15.** $8 + 9 =$ _____ **16.** $7 + 6 =$ _____

Follow the path. Use the clues to help you follow the path.

Clues
- → Add 5
- ↓ Subtract 5
- ← Add 8
- ↑ Subtract 7



6, $2 + 4 = 6$, $6 - 4 = 2$, $6 - 2 = 4$ 9 11

Subtracting Two- and Three-Digit Numbers

Subtract 293 from 482.

Regroup 8 tens 2 ones as 7 tens 12 ones. Subtract the ones.	Regroup 4 hundreds 7 tens as 3 hundreds 17 tens. Subtract the tens.	Subtract the hundreds.
7 12 4 ~~8~~ ~~2~~ − 2 9 3	17 3 ~~7~~ 12 ~~4~~ ~~8~~ ~~2~~ − 2 9 3 8 9	17 3 ~~7~~ 12 ~~4~~ ~~8~~ ~~2~~ − 2 9 3 1 8 9

Subtract.

1. 89 − 73

2. 78 − 35

3. 58 − 24

4. 93 − 27

5. 63 − 36

6. 65 − 28

7. 93 − 67

8. 465 − 253

9. 937 − 214

10. 738 − 217

11. 394 − 285

12. 428 − 319

13. 634 − 459

14. 342 − 258

15. 873 − 385

Tick-Tack-Toe

Do the problems in any order you wish. You win when you have 3 answers that are the same in a row.

95 − 59	83 − 57	74 − 38
849 − 243	796 − 191	935 − 330
754 − 318	561 − 125	835 − 399

16 37 109

Subtraction, Regrouping with Zeros

Subtract 256 from 503.

Regroup 5 hundreds 0 tens as 4 hundreds 10 tens. Then, regroup 10 tens 3 ones as 9 tens 13 ones. Subtract the ones.	Subtract the tens.	Subtract the hundreds.
9 13 4 ~~10~~ ~~5 0 3~~ − 2 5 **6** **7**	**9** 13 4 ~~10~~ ~~5 0 3~~ − 2 **5** 6 **4 7**	9 13 4 ~~10~~ ~~5 0 3~~ − **2** 5 6 **2** 4 7

Subtract.

1. 80 − 36

2. 90 − 42

3. 60 − 35

4. 40 − 23

5. 600 − 420

6. 705 − 230

7. 808 − 164

8. 409 − 235

9. 804 − 212

10. 600 − 338

11. 308 − 129

12. 500 − 254

Mystery Number

Subtract. Cross out your answer in the code strip. The remaining answer is the mystery number.

13. 80 − 14

14. 600 − 420

15. 806 − 335

16. 400 − 236

17. 640 − 358

37	66	164	180	282	471

99 44 592

Estimating Sums and Differences

Estimate the sum to the nearest thousand.

$$\begin{array}{r} 4819 \rightarrow \\ +\,4295 \rightarrow \end{array} \quad \begin{array}{r} 4800 \\ +\,4300 \\ \hline 9100 \end{array}$$

Estimate the difference to the nearest ten thousand.

$$\begin{array}{r} 32\,987 \rightarrow \\ -\,15\,203 \rightarrow \end{array} \quad \begin{array}{r} 30\,000 \\ -\,20\,000 \\ \hline 10\,000 \end{array}$$

Round to the nearest thousand. Estimate the sum or difference. Then find the exact answer.

1. $\begin{array}{r} 4854 \rightarrow \\ +\,2483 \rightarrow \end{array}$ **2.** $\begin{array}{r} 7435 \rightarrow \\ -\,3241 \rightarrow \end{array}$ **3.** $\begin{array}{r} 3584 \rightarrow \\ +\,2338 \rightarrow \end{array}$

Round to the nearest ten thousand. Estimate the sum or difference. Then find the exact answer.

4. $\begin{array}{r} 16\,534 \rightarrow \\ +\,12\,362 \rightarrow \end{array}$ **5.** $\begin{array}{r} 28\,349 \rightarrow \\ -\,19\,837 \rightarrow \end{array}$ **6.** $\begin{array}{r} 43\,562 \rightarrow \\ +\,22\,435 \rightarrow \end{array}$

7. $\begin{array}{r} 38\,345 \rightarrow \\ -\,15\,732 \rightarrow \end{array}$ **8.** $\begin{array}{r} 17\,216 \rightarrow \\ +\,11\,484 \rightarrow \end{array}$ **9.** $\begin{array}{r} 43\,954 \rightarrow \\ -\,28\,323 \rightarrow \end{array}$

Decoding Time

Here is a code.

4000	4909	5000	5389	6000
B	E	C	Q	U

Round each number to the nearest thousand. Estimate the sum or difference. Then find the exact answer. What is the name of the city?

$\begin{array}{r} 3875 \rightarrow \\ +\,1514 \rightarrow \end{array}$		$\begin{array}{r} 7443 \rightarrow \\ -\,2534 \rightarrow \end{array}$		$\begin{array}{r} 8354 \rightarrow \\ -\,3445 \rightarrow \end{array}$	

28 896, 20 000 + 10 000 = 30 000

22 613, 40 000 − 20 000 = 20 000

7337, 5000 + 2000 = 7000

Multiplication, Basic Facts

There are 9 players on each baseball team.
If there are 8 teams in the league,
how many players are there in all?

We can add.	We can multiply.
$9 + 9 + 9 + 9 + 9 + 9 + 9 + 9 = 72$	$9 \times 8 = 72$

There are 72 players in the league.

Fill in the chart. Be careful! The factors on the side are out of order.

	X	0	1	2	3	4	5	6	7	8	9
1.	5										
2.	2										
3.	8										
4.	0										
5.	4										
6.	7										
7.	3										
8.	9										
9.	1										
10.	6										

Solve.

11. Last season Kevin's baseball team averaged 5 runs in a game. If they played 8 games, how many runs did they score all season? _____

12. There are 9 innings in a baseball game. A team gets 3 outs in every inning. How many outs does a team get in an entire game? _____

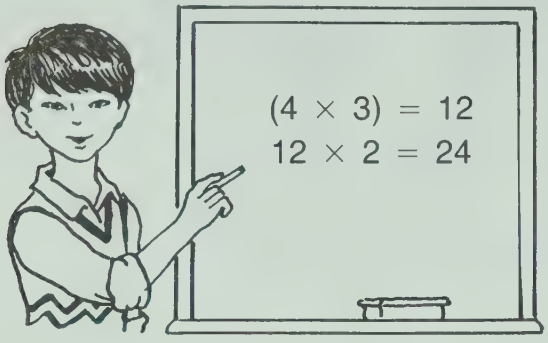
0, 7, 14, 21, 28, 35, 42, 49, 56, 53

0, 5, 10, 15, 20, 25, 30, 35, 40, 45

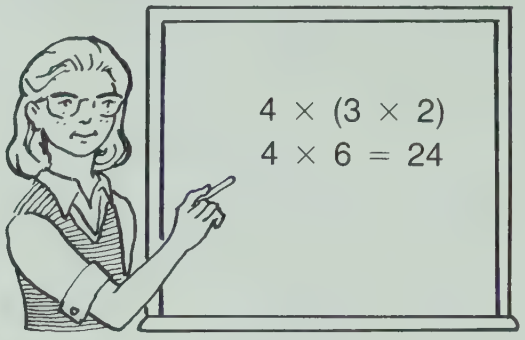
More than Two Factors

Multiply $4 \times 3 \times 2$.

Frank groups the factors this way:



Anna groups the factors this way:



Either way, the answer is 24.

Multiply.

1. $5 \times (3 \times 2) =$ ____ **2.** $(2 \times 4) \times 3 =$ ____ **3.** $(1 \times 2) \times 3 =$ ____

4. $(3 \times 3) \times 2 =$ ____ **5.** $(1 \times 9) \times 8 =$ ____ **6.** $(7 \times 7) \times 0 =$ ____

7. $7 \times (3 \times 1) =$ ____ **8.** $(4 \times 9) \times 0 =$ ____ **9.** $8 \times (3 \times 3) =$ ____

10. $8 \times (3 \times 2) =$ ____ **11.** $9 \times (2 \times 4) =$ ____ **12.** $6 \times (4 \times 1) =$ ____

13. $8 \times (4 \times 2) =$ ____ **14.** $(2 \times 2) \times 9 =$ ____ **15.** $(9 \times 1) \times 9 =$ ____

16. $6 \times (2 \times 3) =$ ____ **17.** $(8 \times 1) \times 8 =$ ____ **18.** $3 \times (4 \times 2) =$ ____

Write the products for each column. Time yourself.
Which column can you do faster?

$4 \times (3 \times 2) =$ ____ $(4 \times 3) \times 2 =$ ____

$(2 \times 3) \times 8 =$ ____ $2 \times (3 \times 8) =$ ____

$(4 \times 2) \times 7 =$ ____ $4 \times (2 \times 7) =$ ____

$(2 \times 3) \times 6 =$ ____ $2 \times (3 \times 6) =$ ____

$9 \times (2 \times 2) =$ ____ $(9 \times 2) \times 2 =$ ____

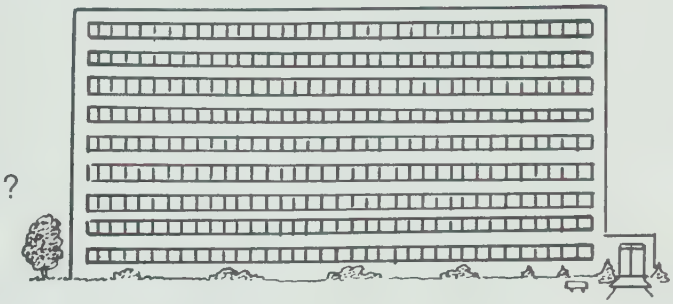
$6 \times (3 \times 3) =$ ____ $(6 \times 3) \times 3 =$ ____

$8 \times (2 \times 2) =$ ____ $(8 \times 2) \times 2 =$ ____

$(2 \times 5) \times 8 =$ ____ $2 \times (5 \times 8) =$ ____

Multiplying by a One-Digit Number

The office building has 9 floors.
There are 36 windows on each floor.
How many windows are in the office building?



Multiply 36 × 9.

Multiply the ones.

$$\begin{array}{r} 36 \\ \times\ 9 \\ \hline 54 \end{array}$$

9 × 6 ones = 54 ones

Multiply the tens.

$$\begin{array}{r} 36 \\ \times\ 9 \\ \hline 54 \\ 270 \end{array}$$

9 × 3 tens = 27 tens

Add.

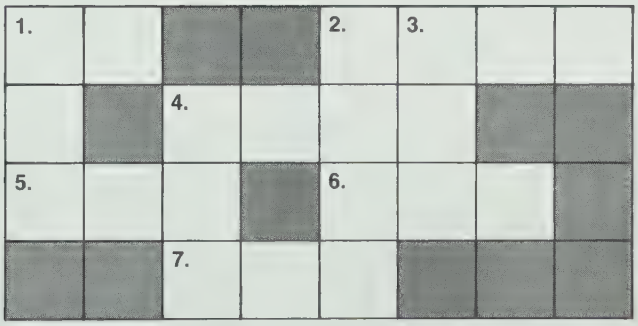
$$\begin{array}{r} 36 \\ \times\ 9 \\ \hline 54 \\ +\ 270 \\ \hline 324 \end{array}$$

Multiply.

1. $\begin{array}{r} 35 \\ \times\ 5 \\ \hline \end{array}$ **2.** $\begin{array}{r} 78 \\ \times\ 3 \\ \hline \end{array}$ **3.** $\begin{array}{r} 43 \\ \times\ 7 \\ \hline \end{array}$ **4.** $\begin{array}{r} 62 \\ \times\ 8 \\ \hline \end{array}$ **5.** $\begin{array}{r} 233 \\ \times\ 3 \\ \hline \end{array}$

6. $\begin{array}{r} 342 \\ \times\ 2 \\ \hline \end{array}$ **7.** $\begin{array}{r} 316 \\ \times\ 4 \\ \hline \end{array}$ **8.** $\begin{array}{r} 721 \\ \times\ 6 \\ \hline \end{array}$ **9.** $\begin{array}{r} 385 \\ \times\ 8 \\ \hline \end{array}$ **10.** $\begin{array}{r} 382 \\ \times\ 7 \\ \hline \end{array}$

Complete the cross-number puzzle.



Across

1. $\begin{array}{r} 47 \\ \times\ 2 \\ \hline \end{array}$ **2.** $\begin{array}{r} 385 \\ \times\ 7 \\ \hline \end{array}$ **4.** $\begin{array}{r} 1083 \\ \times\ 4 \\ \hline \end{array}$

5. $\begin{array}{r} 137 \\ \times\ 6 \\ \hline \end{array}$ **6.** $\begin{array}{r} 143 \\ \times\ 5 \\ \hline \end{array}$ **7.** $\begin{array}{r} 65 \\ \times\ 7 \\ \hline \end{array}$

Down

1. $\begin{array}{r} 469 \\ \times\ 2 \\ \hline \end{array}$ **2.** $\begin{array}{r} 475 \\ \times\ 5 \\ \hline \end{array}$

3. $\begin{array}{r} 207 \\ \times\ 3 \\ \hline \end{array}$ **4.** $\begin{array}{r} 106 \\ \times\ 4 \\ \hline \end{array}$

684 175

Multiplying by Multiples of 10, 100, and 1000

Study the pattern.

40 × 2 = 80	40 × 20 = 800	40 × 200 = 8000	40 × 2000 = 80000

When multiplying by multiples of 10, 100, or 1000, write the appropriate number of zeros. Then multiply by the remaining digits.

Complete the pattern.

1. 70 × 3

2. 70 × 30

3. 70 × 300

4. 70 × 3000

Multiply.

5. 43 × 10

6. 28 × 200

7. 54 × 200

8. 140 × 4000

9. 20 × 60 = _____

10. 43 × 30 = _____

11. 340 × 20 = _____

12. 104 × 200 = _____

13. 38 × 4000 = _____

14. 129 × 3000 = _____

Decoding Time

Here is a code.

960	1200	1320	1350	1600	48 000
N	I	W	P	G	E

Multiply. What is the name of the city?

44 × 30	20 × 60	24 × 40	32 × 30	40 × 30	45 × 30	160 × 300	80 × 20

Multiplying by a Two-Digit Number

Multiply 15 and 32.

Multiply 15 and 2 ones.

$$\begin{array}{r} 15 \\ \times\ 32 \\ \hline 30 \end{array}$$

15 × 2 ones = 30 ones

Multiply 15 and 3 tens.

$$\begin{array}{r} 15 \\ \times\ 32 \\ \hline 30 \\ 450 \end{array}$$

15 × 3 tens = 45 tens

Add.

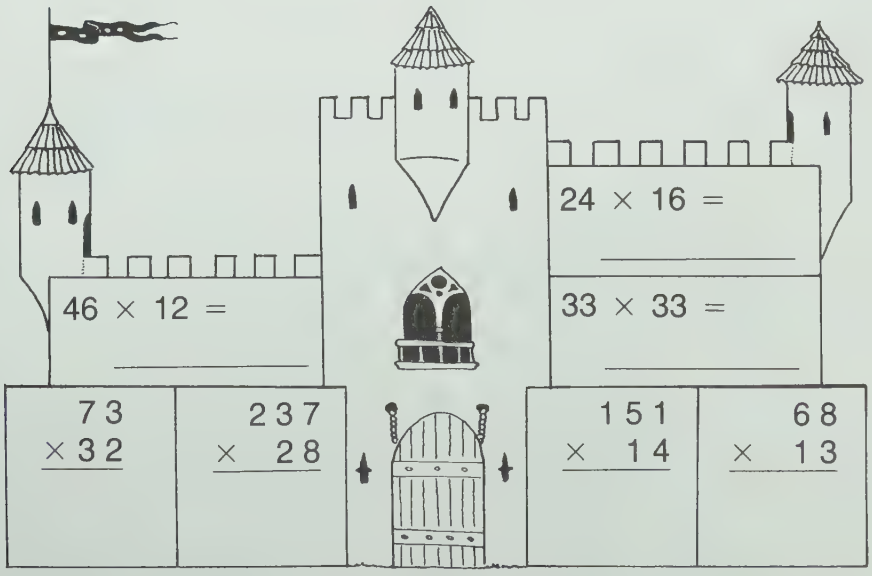
$$\begin{array}{r} 15 \\ \times\ 32 \\ \hline 30 \\ +\ 450 \\ \hline 480 \end{array}$$

Multiply.

1. $\begin{array}{r} 12 \\ \times\ 13 \\ \hline \end{array}$ **2.** $\begin{array}{r} 14 \\ \times\ 12 \\ \hline \end{array}$ **3.** $\begin{array}{r} 44 \\ \times\ 33 \\ \hline \end{array}$ **4.** $\begin{array}{r} 32 \\ \times\ 24 \\ \hline \end{array}$

5. $\begin{array}{r} 137 \\ \times\ 41 \\ \hline \end{array}$ **6.** $\begin{array}{r} 128 \\ \times\ 18 \\ \hline \end{array}$ **7.** $\begin{array}{r} 233 \\ \times\ 37 \\ \hline \end{array}$ **8.** $\begin{array}{r} 368 \\ \times\ 46 \\ \hline \end{array}$

The castle's secret passage is at the box whose product is 2114.
Where is the secret passage?



Estimating the Product

Matt is ordering electronic games for his toy store. There are 144 games in each case. He is ordering 25 cases. About how many electronic games is he ordering?

Estimate the product.

Round each number to the highest place value.

$$\begin{array}{rr} 144 \rightarrow & 100 \\ \times\ 25 \rightarrow & \times\ 30 \\ \hline & 3000 \end{array}$$

Matt is ordering about 3000 games.

Round and multiply to estimate the product. Then, find the exact product.

1. $24 \rightarrow$ $\times 16 \rightarrow$

2. $14 \rightarrow$ $\times 35 \rightarrow$

3. $84 \rightarrow$ $\times 19 \rightarrow$

4. $832 \rightarrow$ $\times\ 45 \rightarrow$

5. $775 \rightarrow$ $\times\ 24 \rightarrow$

6. $283 \rightarrow$ $\times 438 \rightarrow$

Choose the Exact Product

Round each number and multiply to estimate the product. Use your estimate to choose the exact product. It is not necessary to compute the exact product.

7. 32×28

A. 896
B. 8960
C. 89 600

8. 98×12

A. 576
B. 676
C. 1176

9. $382 \times\ 24$

A. 916
B. 9168
C. 91 680

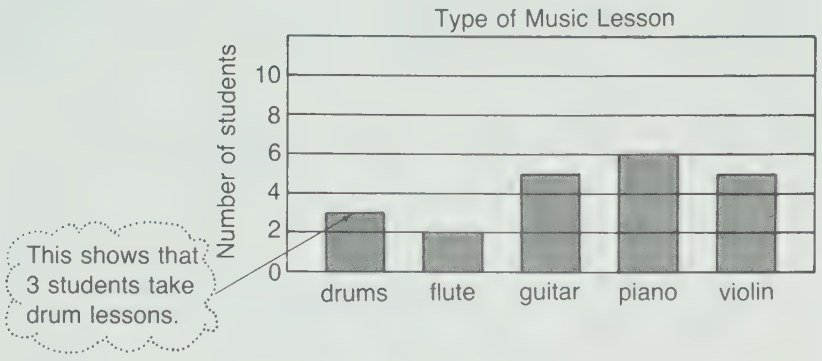
10. 489×214

A. 104 646
B. 1 004 646
C. 1 046 466

$37\,440,\ 800 \times 50 = 40\,000$ $384,\ 20 \times 20 = 400$

Reading Graphs

Jacques took a survey of fifth grade students who take music lessons. He drew a bar graph to show his information.



Use the graph to answer the questions.

1. How many students take flute lessons? _____

2. How many students take guitar lessons? _____

3. Which instrument is studied by the least number of students? _____

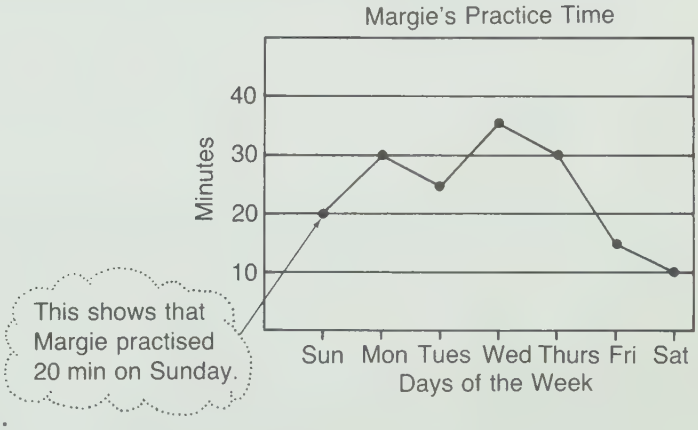
4. Which instrument is studied by the most students? _____

   How many students study it? _____

5. Which two instruments are studied by the same number of students?

   _____

Margie drew a line graph showing how much time she spent practising piano one week.



Use the graph to answer the questions.

6. How long did Margie practise on Tuesday? _____

7. How long did Margie practise on Friday? _____

8. On which two days did Margie practise 30 min? _____

9. On which day did Margie practise the least? _____

   How long did she practise on that day? _____

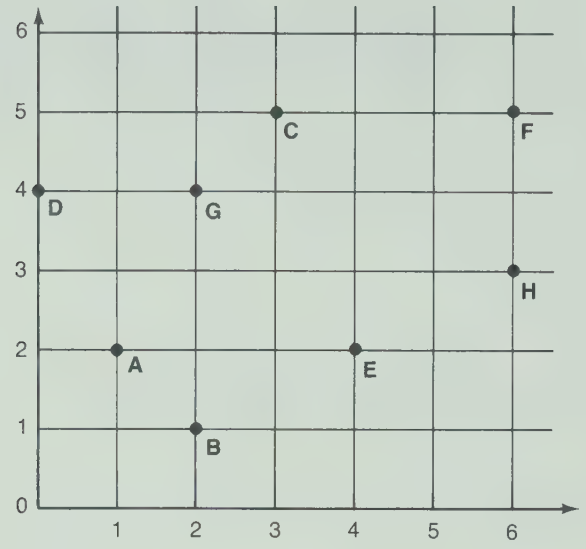
10. On which day did Margie practise the most? _____

    How long did she practise on that day? _____

piano 25 minutes 2

Ordered Pairs of Numbers and Points on a Grid

Each point on this grid can be matched with an ordered pair of numbers.



To reach point A from 0, count "over" 1 and "up" 2. Point A matches the ordered pair (1,2).

To reach point B from 0, count "over" 2 and "up" 1. Point B matches the ordered pair (2,1).

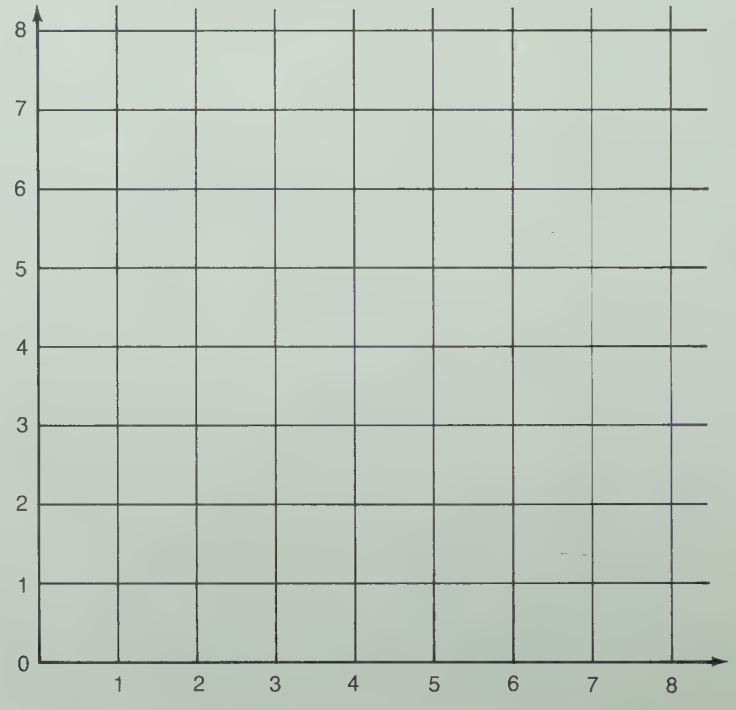
Give the ordered pair of numbers that matches each point.

1. point C _____ **2.** point E _____ **3.** point H _____

4. point D _____ **5.** point G _____ **6.** point F _____

Plot each point on the grid. Connect the points in order as you draw them. What shape have you made?

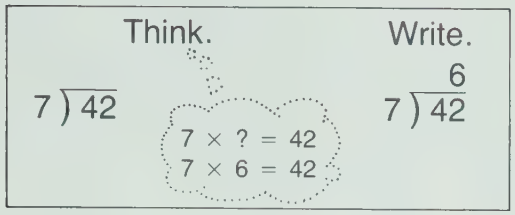
(2,1)
(4,1)
(6,3)
(6,5)
(4,7)
(2,7)
(0,5)
(0,3)
(2,1)



(0,4) (3,5)

Division, Basic Facts

Divide 42 by 7.



Find the quotient. Write the multiplication fact you use.

1. $4\overline{)12}$ **2.** $3\overline{)9}$ **3.** $5\overline{)15}$

4. 21 ÷ 7 = _____ **5.** 36 ÷ 4 = _____ **6.** 72 ÷ 9 = _____

Divide.

7. $2\overline{)18}$ **8.** $8\overline{)16}$ **9.** $6\overline{)30}$ **10.** $2\overline{)14}$

11. $8\overline{)24}$ **12.** $9\overline{)54}$ **13.** $6\overline{)36}$ **14.** $9\overline{)63}$

15. $6\overline{)18}$ **16.** $7\overline{)28}$ **17.** $7\overline{)63}$ **18.** $4\overline{)32}$

19. 56 ÷ 7 = _____ **20.** 24 ÷ 4 = _____ **21.** 27 ÷ 9 = _____ **22.** 36 ÷ 4 = _____

23. 48 ÷ 8 = _____ **24.** 81 ÷ 9 = _____ **25.** 72 ÷ 8 = _____ **26.** 28 ÷ 7 = _____

Here is a code.

A	T	W	O
6	7	8	9

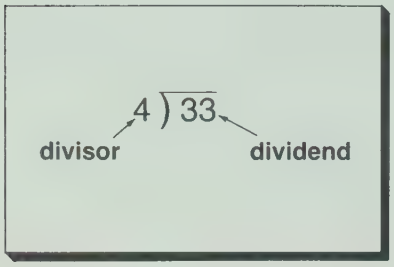
Divide. What is the name of the city?

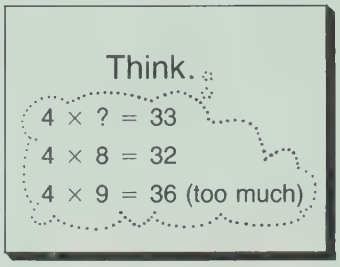
$4\overline{)36}$	$5\overline{)35}$	$9\overline{)63}$	$9\overline{)54}$	$8\overline{)64}$	$7\overline{)42}$

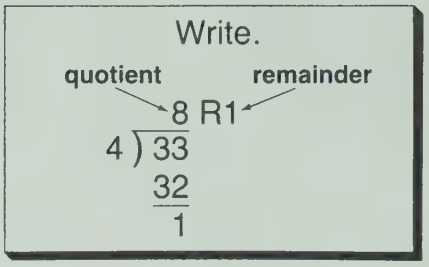
8 3, 4 × 3 = 12 9

Remainders

Divide 33 by 4.







Find the quotient and the remainder. Write the multiplication fact you use.

1. $2\overline{)19}$ **2.** $3\overline{)16}$ **3.** $4\overline{)27}$

4. $7\overline{)47}$ **5.** $8\overline{)68}$ **6.** $5\overline{)49}$

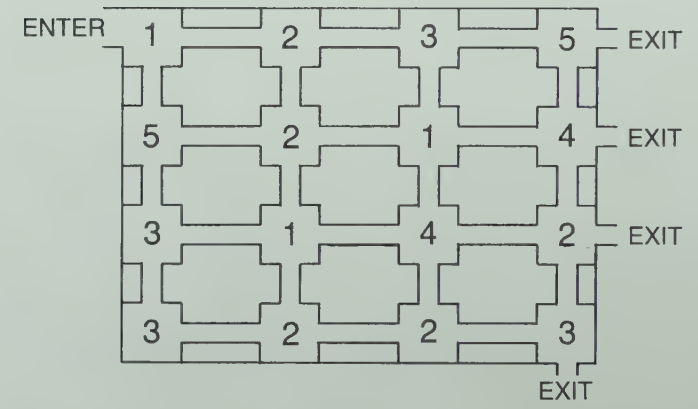
Divide. Use the remainders to find the correct path through the maze.

7. $2\overline{)17}$ **8.** $3\overline{)11}$ **9.** $5\overline{)23}$ **10.** $3\overline{)28}$

11. $4\overline{)30}$ **12.** $6\overline{)25}$ **13.** $5\overline{)43}$ **14.** $4\overline{)27}$

15. $5\overline{)42}$ **16.** $6\overline{)56}$

17. $9\overline{)84}$ **18.** $4\overline{)34}$



9 R1, $2 \times 9 = 18$ 8 R1 6 R5, $7 \times 6 = 42$

Regrouping Tens

Divide 72 by 3.

72 = 7 tens 2 ones.

Divide the tens.

3 × 2 tens = 6 tens

3 × 3 tens = 9 tens (too many)

$$\begin{array}{r} \mathbf{20} \\ 3\overline{)72} \\ \mathbf{60} \\ \hline 12 \end{array}$$

Divide the ones.

3 × 4 ones = 12 ones

$$\begin{array}{r} \mathbf{4} \\ 20 \\ 3\overline{)72} \\ 60 \\ \hline 12 \\ \mathbf{12} \\ \hline 0 \end{array}$$

Add for the quotients.

$$\begin{array}{r} \mathbf{4} \\ \mathbf{20} \\ 3\overline{)72} \\ 60 \\ \hline 12 \\ 12 \\ \hline 0 \end{array} \quad \left.\begin{array}{l}\\ \\ \\ \\ \\ \\ \\ \end{array}\right\} \mathbf{24}$$

Divide.

1. $3\overline{)55}$ **2.** $2\overline{)53}$ **3.** $3\overline{)86}$ **4.** $4\overline{)73}$ **5.** $2\overline{)73}$

6. $4\overline{)65}$ **7.** $5\overline{)73}$ **8.** $6\overline{)99}$ **9.** $8\overline{)94}$ **10.** $4\overline{)70}$

11. 86 ÷ 5 = _____ **12.** 74 ÷ 6 = _____ **13.** 83 ÷ 7 = _____ **14.** 57 ÷ 4 = _____

Divide. Circle the two problems that have the same answer.

$6\overline{)73}$ $8\overline{)99}$ $5\overline{)62}$ $7\overline{)86}$ $5\overline{)64}$

16 R1 18 R1 17 R1

Regrouping Hundreds, Regrouping Tens

Divide 435 by 5.

435 = 4 hundreds 3 tens 5 ones.

Divide the hundreds.
Regroup 4 hundreds 3 tens as 43 tens.

5 × 8 tens = 40 tens
5 × 9 tens = 45 tens (too many)

$$\begin{array}{r} 80 \\ 5\overline{)439} \\ 400 \\ \hline 39 \end{array}$$

Divide the tens.
Regroup 3 tens 9 ones as 39 ones.

5 × 7 ones = 35 ones
5 × 8 ones = 40 ones (too many)

$$\begin{array}{r} 7 \\ 80 \\ 5\overline{)439} \\ 400 \\ \hline 39 \\ 35 \\ \hline 4 \end{array} \quad \left.\begin{array}{l}\\\\\\\\\\\\\end{array}\right\} \ 87 \text{ R}4$$

Add and write the remainder.

Divide. Connect the dots in the order of the remainders.

7 ● ● 6 ● ● 0 ● 4 ● ● 2

1. $2\overline{)349}$ 2. $5\overline{)379}$ 3. $3\overline{)281}$

4. $5\overline{)388}$ 5. $6\overline{)707}$ 6. $6\overline{)732}$

7. $9\overline{)835}$ 8. $8\overline{)934}$ 9. $9\overline{)422}$

Dividing by a One-Digit Number

Divide 5381 by 4.

Divide the thousands.

$$\begin{array}{r} \mathbf{1000} \\ 4\overline{)\,5381} \\ \mathbf{4000} \\ \hline 1381 \end{array}$$

Divide the hundreds.

$$\begin{array}{r} \mathbf{300} \\ 1000 \\ 4\overline{)\,5381} \\ 4000 \\ \hline 1381 \\ \mathbf{1200} \\ \hline 181 \end{array}$$

Regroup
1 thousand
3 hundreds
as 13 hundreds.

Divide the tens.

$$\begin{array}{r} \mathbf{40} \\ 300 \\ 1000 \\ 4\overline{)\,5381} \\ 4000 \\ \hline 1381 \\ 1200 \\ \hline 181 \\ \mathbf{160} \\ \hline 21 \end{array}$$

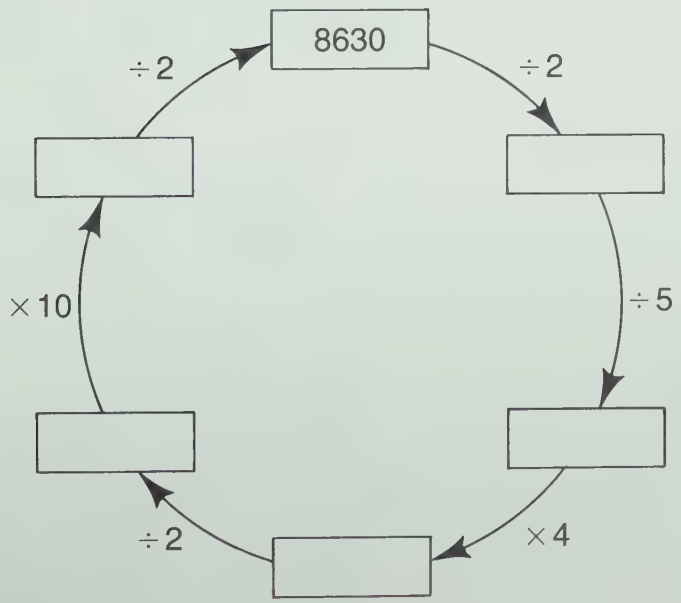
Regroup
1 hundred 5 tens
as 15 tens.

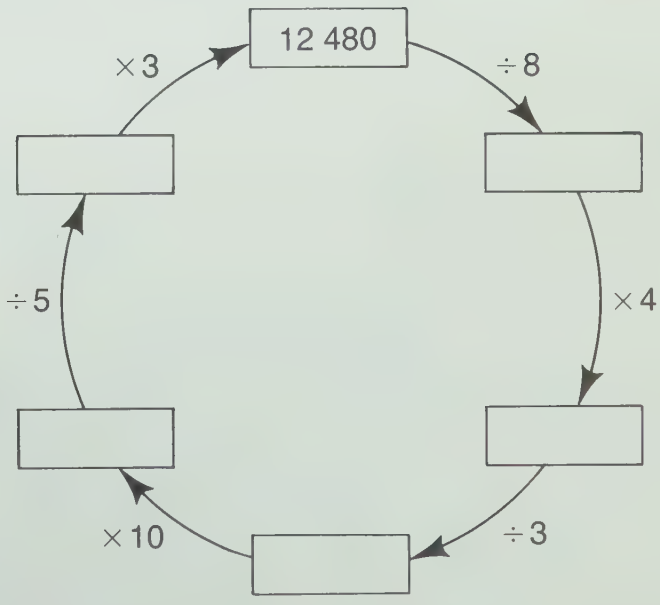
Divide the ones.

$$\begin{array}{r} \mathbf{5} \\ 40 \\ 300 \\ 1000 \\ 4\overline{)\,5381} \\ 4000 \\ \hline 1381 \\ 1200 \\ \hline 181 \\ 160 \\ \hline 21 \\ \mathbf{20} \\ \hline 1 \end{array} \quad 1345\ \text{R}1$$

Regroup
2 tens 1 one
as 21 ones.

Follow the instructions.





Checking Division

You can use multiplication and addition to check your answers in division.

Divide

$$3\overline{)845} \quad 281\ R2$$

600
245
240
5
3
2

Check.

281 ← **quotient**
× 3 ← **divisor**
843
\+ 2 ← **remainder**
845 ← **dividend**

Use multiplication and addition to check George's test paper. Correct any wrong answers.

Name George

1. $2\overline{)284}$ 142
2. $3\overline{)378}$ 129
3. $2\overline{)457}$ 228
4. $4\overline{)355}$ 88
5. $5\overline{)1345}$ 269
6. $2\overline{)2384}$ 1191 R1
7. $5\overline{)3265}$ 453
8. $3\overline{)4358}$ 1452 R2
9. $6\overline{)2548}$ 424 R4
10. $2\overline{)16\,426}$ 8 213
11. $3\overline{)3829}$ 1276 R2
12. $6\overline{)18\,329}$ 3540 R4

Finding the Average

Sonia bowled 3 games. Her scores were 94, 110, and 84. What was her average score?

Add the scores to find her total score.

$$\begin{array}{r} 94 \\ 110 \\ +\ 84 \\ \hline 288 \end{array}$$

Divide by the number of games to find her average score.

$$3\overline{)288}\quad \begin{array}{r} 96 \\ 27 \\ 18 \\ 18 \\ \hline 0 \end{array}$$

Sonia's average score is 96.

Solve.

1. Cindy scored 2 goals in Saturday's soccer game. She scored 4 goals in Sunday's game. What was the average number of goals she scored in each game?

   _____

2. Fred studied 15 min on Monday, 25 min on Tuesday, 40 min on Wednesday, and 20 min on Thursday. What was the average amount of time he spent studying each day?

   _____

3. Pierre received the following math scores: 98, 92, 81, 86, and 88. What was his average score?

   _____

4. Marta got the following scores on her electronic Wham-o game: 475, 247 and 532. What was her average score?

   _____

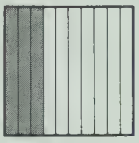
Find each average. Circle the average that is different.

72 buttons on 9 skirts. _____	54 players in 6 teams. _____
56 pictures on 7 album pages. _____	24 h of sleep in 3 days. _____
32 books on 4 shelves. _____	40 problems finished in 5 min. _____

3 goals

Using Decimals to Show Tenths

Each square is divided into ten equal parts.

ones	•	tenths
	•	
2	•	3

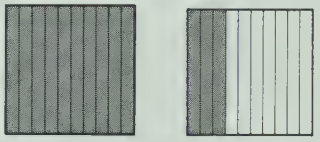
2 wholes and $\frac{3}{10}$ are shaded. We write 2.3.

How many wholes and how many tenths are shaded? Write the decimal for each.

1.

ones	•	tenths
	•	

_____

2. 

ones	•	tenths
	•	

_____

Write the decimals.

3. eight and four-tenths _____

4. two-tenths _____

5. one-tenth _____

6. ten and nine-tenths _____

Write the words.

7. 0.8 _____

8. 8.9 _____

9. 10.5 _____

10. 0.5 _____

Match the decimals with their word names.

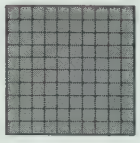
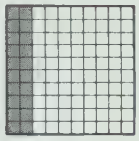
1.1	ten and zero-tenths
10.0	two and one-tenth
0.1	one and one-tenth
2.1	one and two-tenths
1.2	one-tenth

4.0	fourteen and four-tenths
0.4	four and zero-tenths
14.0	four and four-tenths
14.4	four-tenths
4.4	fourteen

2.6 8.4 eight-tenths

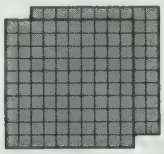
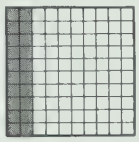
Using Decimals to Show Hundredths

Each square is divided into 100 equal parts.

ones	•	tenths	hundredths
			
1	•	2	3

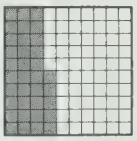
1 whole and $\frac{23}{100}$ are shaded. We write 1.23.

How many wholes and how many hundredths are shaded?

1.  

ones	•	tenths	hundredths

_____

2. 

ones	•	tenths	hundredths

_____

Write the decimals.

3. 8 and 32 hundredths _____

4. 16 hundredths _____

5. 2 and 12 hundredths _____

6. 5 and 4 hundredths _____

Write the words.

7. 6.20 _____

8. 0.02 _____

9. 0.39 _____

10. 4.35 _____

Match each decimal number with two word names.

0.3	10 tenths	100 hundredths
0.4	3 tenths	30 hundredths
1	1 tenth	10 hundredths
0.1	40 tenths	400 hundredths
4	4 tenths	40 hundredths

Comparing and Ordering Decimals

Compare 3.29 and 3.4.

Write each number with the same number of decimal places.

3.29 = 3.29

3.4 = 3.40

Adding zeros to the right of a decimal does not change the value.

Compare each digit.

ones	•	tenths	hundredths
3	•	2	9
3	•	4	0

same

$2 < 4$ so

$3.29 < 3.40$

Use >, <, or = to make true statements.

1. 1.38 _____ 2.38

2. 3.0 _____ 3.00

3. 4.5 _____ 4.05

4. 4.36 _____ 4.63

5. 5.4 _____ 5.35

6. 3.8 _____ 3.80

7. 8.9 _____ 8.91

8. 6.3 _____ 6.43

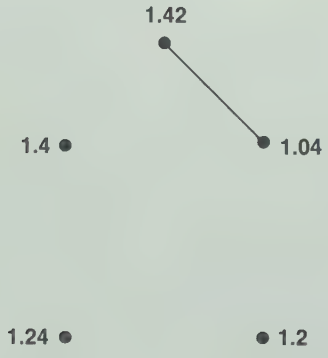
9. 4.2 _____ 3.8

10. 24.39 _____ 24.25

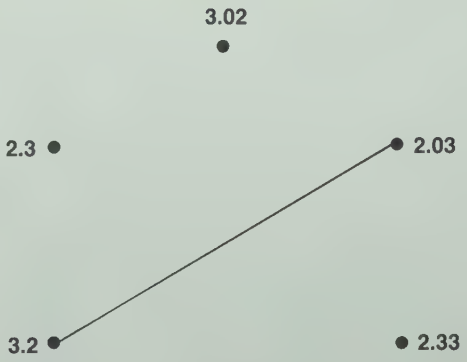
11. 17.6 _____ 17.59

12. 98.3 _____ 98.30

Connect the dots in order from least to greatest.



Connect the dots in order from greatest to least.



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Rounding Decimals

Study the chart.

Number	Round to this place value.	Check the digit to its right.	Is it 5 or greater?	Round
1.**8**4	ones	tenths	yes	up to 2
1.8**4**	tenths	hundredths	no	down to 1.8

Round to the nearest whole number.

1. 3.8 _____ **2.** 2.4 _____ **3.** 5.5 _____ **4.** 11.8 _____

5. 2.38 _____ **6.** 4.72 _____ **7.** 5.83 _____ **8.** 6.92 _____

9. 9.3 _____ **10.** 9.8 _____ **11.** 13.54 _____ **12.** 23.298 _____

Round to the nearest tenth.

13. 1.31 _____ **14.** 2.47 _____ **15.** 1.82 _____ **16.** 0.95 _____

17. 6.382 _____ **18.** 3.333 _____ **19.** 9.290 _____ **20.** 2.350 _____

21. 1.099 _____ **22.** 2.396 _____ **23.** 17.342 _____ **24.** 28.828 _____

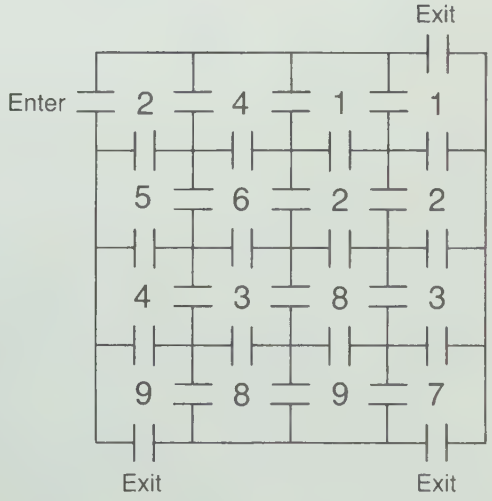
Round each number to the nearest whole number.
Then follow your answers through the maze.

a. 2.3 _____ **b.** 4.6 _____ **c.** 5.8 _____

d. 1.5 _____ **e.** 2.3 _____ **f.** 3.2 _____

g. 7.8 _____ **h.** 8.5 _____ **i.** 8.2 _____

j. 3.4 _____ **k.** 3.6 _____ **l.** 8.8 _____



6.4 4 2 9 1.3 1.1

Adding Decimals

Add 13.2, 14.3, and 11.8.

Add the tenths and regroup.

$$\begin{array}{r} {\scriptstyle 1} \\ 13.2 \\ 14.3 \\ +\ 11.8 \\ \hline 3 \end{array}$$

Line up the decimal points.

Add the ones.

$$\begin{array}{r} {\scriptstyle 1} \\ 13.2 \\ 14.3 \\ +\ 11.8 \\ \hline 93 \end{array}$$

Add the tens.

$$\begin{array}{r} {\scriptstyle 1} \\ 13.2 \\ 14.3 \\ +\ 11.8 \\ \hline 39.3 \end{array}$$

Put decimal point in line with the others.

Add.

1. $\begin{array}{r} 3.5 \\ +\ 2.4 \\ \hline \end{array}$ **2.** $\begin{array}{r} 1.3 \\ +\ 3.5 \\ \hline \end{array}$ **3.** $\begin{array}{r} 7.4 \\ +\ 2.1 \\ \hline \end{array}$ **4.** $\begin{array}{r} 6.9 \\ +\ 2.5 \\ \hline \end{array}$ **5.** $\begin{array}{r} 7.8 \\ +\ 3.8 \\ \hline \end{array}$

6. $\begin{array}{r} 6.38 \\ +\ 2.47 \\ \hline \end{array}$ **7.** $\begin{array}{r} 2.24 \\ +\ 5.38 \\ \hline \end{array}$ **8.** $\begin{array}{r} 4.85 \\ +\ 3.86 \\ \hline \end{array}$ **9.** $\begin{array}{r} 3.82 \\ +\ 4.68 \\ \hline \end{array}$ **10.** $\begin{array}{r} 2.88 \\ +\ 3.35 \\ \hline \end{array}$

Carlo is locked out of his house. He needs to find the key whose sum is 26.1. Can you help him find it in 3 tries or less?

8.85 5.9

Subtracting Decimals

Subtract 5.80 from 7.29.

Subtract hundredths.

$$\begin{array}{r} 7.29 \\ -\ 5.80 \\ \hline 9 \end{array}$$

Line up the decimal points

Regroup 7 ones 2 tenths as 6 ones 12 tenths. Subtract the tenths.

$$\begin{array}{r} {\scriptstyle 6\ 12} \\ 7.29 \\ -\ 5.80 \\ \hline .49 \end{array}$$

Subtract the ones.

$$\begin{array}{r} {\scriptstyle 6\ 12} \\ 7.29 \\ -\ 5.80 \\ \hline 1.49 \end{array}$$

Place the decimal point in line with the others.

Subtract.

1. $\begin{array}{r} 8.5 \\ -\ 3.2 \\ \hline \end{array}$ **2.** $\begin{array}{r} 9.4 \\ -\ 2.5 \\ \hline \end{array}$ **3.** $\begin{array}{r} 3.8 \\ -\ 1.2 \\ \hline \end{array}$ **4.** $\begin{array}{r} 7.2 \\ -\ 4.5 \\ \hline \end{array}$ **5.** $\begin{array}{r} 8.5 \\ -\ 3.9 \\ \hline \end{array}$

6. $\begin{array}{r} 7.95 \\ -\ 3.87 \\ \hline \end{array}$ **7.** $\begin{array}{r} 6.49 \\ -\ 2.83 \\ \hline \end{array}$ **8.** $\begin{array}{r} 5.93 \\ -\ 2.84 \\ \hline \end{array}$ **9.** $\begin{array}{r} 4.30 \\ -\ 1.82 \\ \hline \end{array}$ **10.** $\begin{array}{r} 4.00 \\ -\ 2.35 \\ \hline \end{array}$

Subtract. Add to check.

11. $\begin{array}{r} 8.6 \\ -\ 2.9 \\ \hline \end{array}$ **12.** $\begin{array}{r} 5.03 \\ -\ 0.35 \\ \hline \end{array}$ **13.** $\begin{array}{r} 9.38 \\ -\ 6.72 \\ \hline \end{array}$ **14.** $\begin{array}{r} 24.39 \\ -\ 16.93 \\ \hline \end{array}$

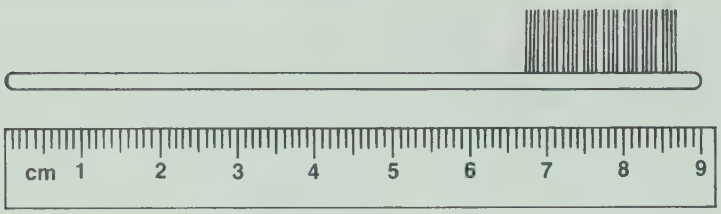
Subtract across and down. Then find the differences for the corner box.

− → / ↓			
9.35	3.68		
3.08	1.66		

− → / ↓		
8.39	2.18	
2.78	0.82	

Metres, Centimetres, and Millimetres

Measure the toothbrush.



The toothbrush is 9 cm long.

How many millimetres long is it?

1 cm = 10 mm
9 cm = 90 mm

The toothbrush is 90 mm long.

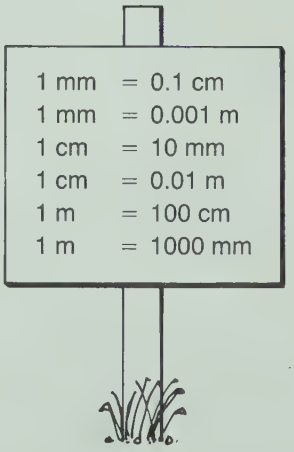
How many metres long is it?

1 cm = 0.01 m
9 cm = 0.09 m

The toothbrush is 0.09 m long.

Write the equivalent measurements in the chart. Use the information on the sign if needed.

	millimetres	centimetres	metres
1.	9.7 mm		
2.	4 mm		
3.		17 cm	
4.		230 cm	
5.			6.2 m
6.			73 m



Circle the best estimate.

7. The length of a car is about: 500 mm 60.8 cm 6 m

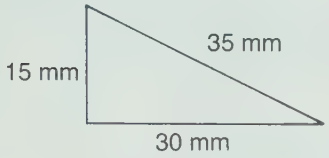
8. The length of a paper clip is about: 25 mm 25 cm 0.2 m

9. The width of a book is about: 200 mm 2 cm 0.2 m

10. The thickness of a quarter is about: 2 mm 2 cm 0.02 m

Finding the Perimeter

The **perimeter** is the distance around a figure.



To find the perimeter, add the lengths of the sides.

In millimetres:

$$\begin{array}{r} 15 \\ 30 \\ +\,35 \\ \hline 80 \end{array}$$

The perimeter of the triangle is 80 mm.

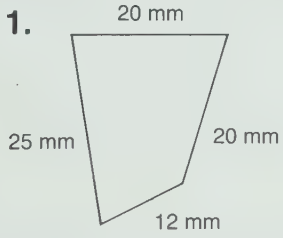
In centimetres:

$$\begin{array}{r} 1.5 \\ 3.0 \\ +\,3.5 \\ \hline 8.0 \end{array}$$

The perimeter of the triangle is 8 cm.

Find the perimeter for each figure.

1.



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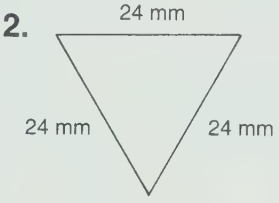
2.



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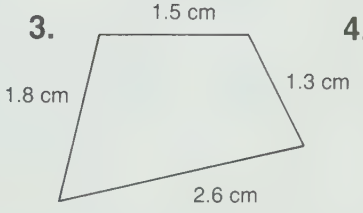
3.



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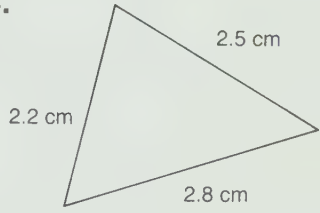
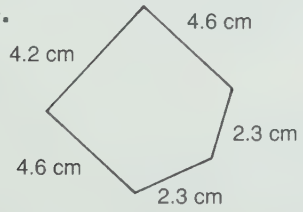
4.



_____

Find the perimeter in the given unit. Then, complete the chart to show the perimeter in each unit.

5.



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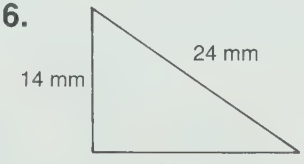
6.



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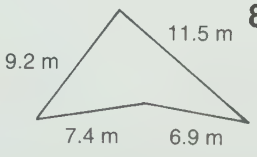
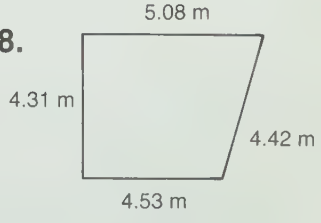
7.



_____

8.



_____

	millimetres	centimetres	metres
5.			
6.			
7.			
8.			

77 mm

180 mm, 18 cm, 0.18 m

Finding the Area of a Rectangle

What is the area of this rectangle?

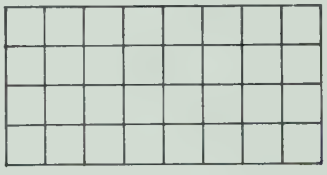
Each small square represents 1 cm².

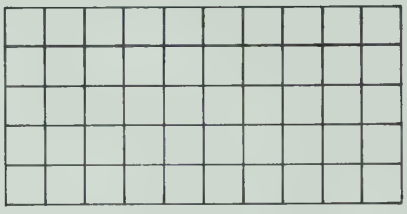
You can count the squares.
Counting shows that there are 15 cm² inside the rectangle.

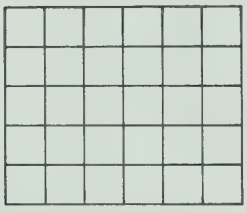
You can also multiply.
There are 3 rows of square centimetres with 5 in each row.
$3 \times 5 = 15$ cm²

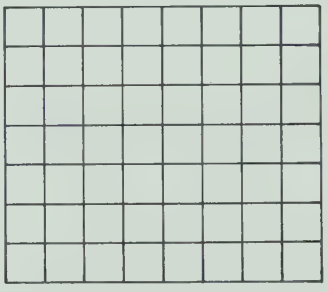
Each small square represents 1 cm².
What is the area of each figure?

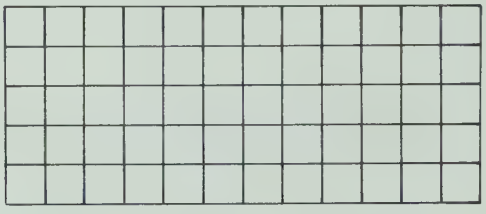
1. _____

2. 

3.  _____

4.  _____

5. 

6.  _____

Draw a rectangle with each area.

7. 12 cm²

8. 18 cm²

9. 20 cm²

Multiplying Decimals by One-Digit Whole Numbers

Multiply 3.8 and 2.

Multiply the tenths.

$$\begin{array}{r} {\scriptstyle 1} \\ 3.8 \\ \times\ \ 2 \\ \hline 6 \end{array}$$

2 × 8 tenths = 16 tenths
Regroup as 1 one 6 tenths.

Multiply the ones.

$$\begin{array}{r} {\scriptstyle 1} \\ 3.8 \\ \times\ \ 2 \\ \hline 7.6 \end{array}$$

Put in the decimal point.

2 × 3 ones = 6 ones
6 ones + 1 one = 7 ones

Multiply.

1. 3.4 × 2

2. 4.3 × 3

3. 2.8 × 6

4. 1.9 × 2

5. 17.3 × 5

6. 0.28 × 4

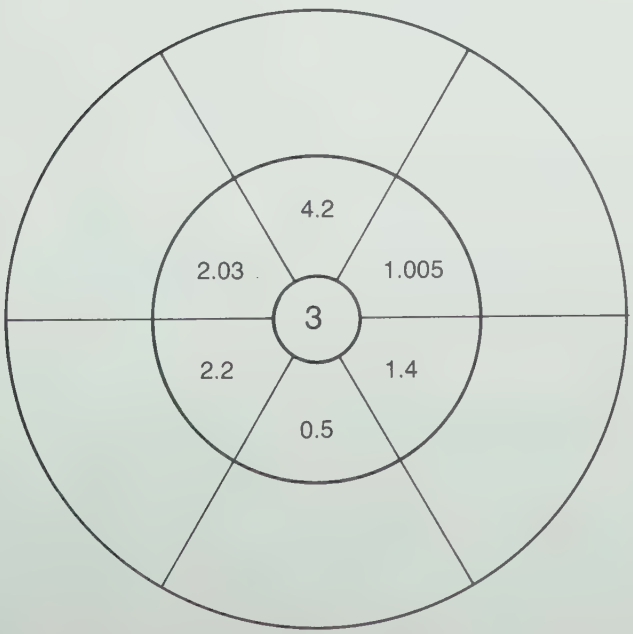
7. 2.93 × 5

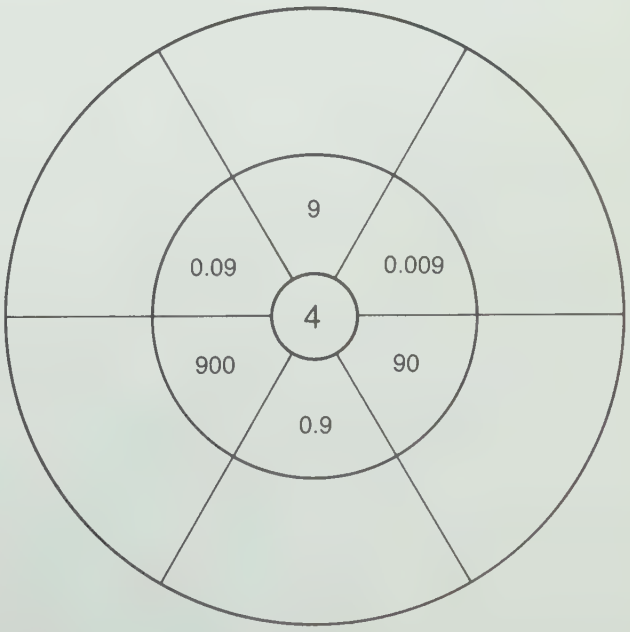
8. 0.06 × 4

9. 19.7 × 3

10. 72.48 × 2

Complete the product wheels. Find each product by multiplying a number by the number in the centre.





6.8 1.12

Estimating the Product

Estimate the product.

$$\begin{array}{r} 5.2 \rightarrow \quad 5 \\ \times \quad 3 \rightarrow \times 3 \\ \hline \quad\quad 15 \end{array}$$

Round to the nearest whole number. Then, multiply.

Find the exact product.

$$\begin{array}{r} 5.2 \\ \times \quad 3 \\ \hline 15.6 \end{array}$$

Use your estimate to help you decide where to put the decimal point.

Round to the nearest whole number. Estimate the product, then find the exact product.

1. $4.6 \rightarrow \times 2 \rightarrow$

2. $7.3 \rightarrow \times 6 \rightarrow$

3. $3.48 \rightarrow \times 3 \rightarrow$

4. $4.08 \rightarrow \times 5 \rightarrow$

5. $2.867 \rightarrow \times 9 \rightarrow$

6. $42.68 \rightarrow \times 4 \rightarrow$

Estimate the product. Then use your estimate to choose the exact product. It is not necessary to compute the exact product.

7. $2.4 \rightarrow \times 3 \rightarrow$

A. 0.072
B. 0.72
C. 7.2

8. $4.5 \rightarrow \times 9 \rightarrow$

A. 4.05
B. 40.5
C. 405

9. $4.7 \rightarrow \times 4 \rightarrow$

A. 0.188
B. 1.88
C. 18.8

10. $3.28 \rightarrow \times 6 \rightarrow$

A. 0.1968
B. 1.968
C. 19.68

11. $2.38 \rightarrow \times 3 \rightarrow$

A. 0.714
B. 7.14
C. 71.4

12. $5.383 \rightarrow \times 6 \rightarrow$

A. 32.298
B. 322.98
C. 3229.8

9.2, $5 \times 2 = 10$ | $2 \times 3 = 6$, C. 7.2 | 20.40, $4 \times 5 = 20$

Multiplying Decimals and Whole Numbers

Multiply 3.4 × 12.
Exact Answer

$$\begin{array}{r} 3.4 \\ \times 12 \\ \hline 68 \\ 340 \\ \hline 40.8 \end{array}$$

Estimate

$$\begin{array}{r} 3 \\ \times 12 \\ \hline 36 \end{array}$$

The estimate shows where to place the decimal point.

Multiply 3.42 × 12.
Exact Answer

$$\begin{array}{r} 3.42 \\ \times \quad 12 \\ \hline 684 \\ 3420 \\ \hline 41.04 \end{array}$$

Multiply.

1. $\begin{array}{r} 24 \\ \times 4.2 \\ \hline \end{array}$

2. $\begin{array}{r} 0.35 \\ \times \quad 23 \\ \hline \end{array}$

3. $\begin{array}{r} 1.36 \\ \times \quad 16 \\ \hline \end{array}$

4. $\begin{array}{r} 324 \\ \times \quad 2.5 \\ \hline \end{array}$

5. $\begin{array}{r} 2.36 \\ \times \quad 43 \\ \hline \end{array}$

6. $\begin{array}{r} 453 \\ \times \quad 1.8 \\ \hline \end{array}$

7. $\begin{array}{r} 20.9 \\ \times \quad 33 \\ \hline \end{array}$

8. $\begin{array}{r} 3.574 \\ \times \quad 34 \\ \hline \end{array}$

Here is a code.

114.8	115	133.2	136.5
R	A	E	D

What kind of snake doesn't multiply? Multiply to solve the riddle.

$\begin{array}{r} 4.6 \\ \times 25 \\ \hline \end{array}$	$\begin{array}{r} 9.1 \\ \times 15 \\ \hline \end{array}$	$\begin{array}{r} 5.46 \\ \times \quad 25 \\ \hline \end{array}$	$\begin{array}{r} 3.6 \\ \times 37 \\ \hline \end{array}$	$\begin{array}{r} 4.1 \\ \times 28 \\ \hline \end{array}$

101.48 100.8

100, 10, 0.1, 0.01 as Factors

$3.72 \times 10 = 37.2$ Move decimal point 1 place to the right.

$3.72 \times 100 = 372.$ Move decimal point 2 places to the right.

$3.72 \times 0.1 = 0.372$ Move decimal point 1 place to the left.

$3.72 \times 0.01 = 0.0372$ Move decimal point 2 places to the left.

Complete the patterns.

1. $58 \times 10 =$ _____

$58 \times 100 =$ _____

$58 \times 0.1 =$ _____

$58 \times 0.01 =$ _____

2. $2.6 \times 10 =$ _____

$2.6 \times 100 =$ _____

$2.6 \times 0.1 =$ _____

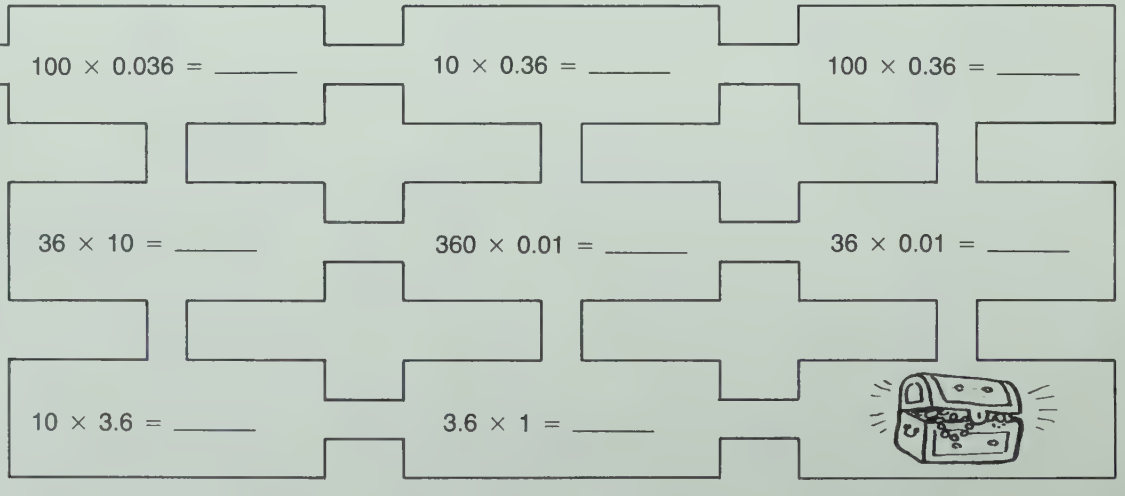
$2.6 \times 0.01 =$ _____

Multiply.

3. $4 \times 0.1 =$ _____ **4.** $230 \times 0.01 =$ _____ **5.** $10 \times 43.7 =$ _____

6. $0.1 \times 0.009 =$ _____ **7.** $2.3 \times 0.1 =$ _____ **8.** $4.58 \times 0.01 =$ _____

Lead the pirate to the treasure. Solve the problems below. Draw lines connecting the boxes in which the product is 3.6.



0.4 580, 5800, 5.8, 0.58 0.0009

Multiplying Decimal Tenths, One Factor Less Than 1.0

Multiply 4.3 × 0.6.

Multiply.

$$\begin{array}{r} {\scriptstyle 1} \\ 4.3 \\ \times\ 0.6 \\ \hline 2.58 \end{array}$$

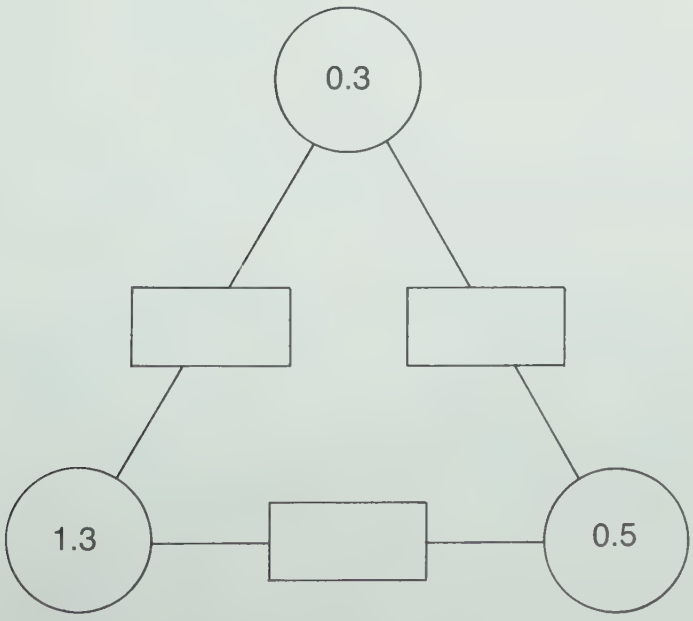
Remember: tenths × tenths equals hundredths.

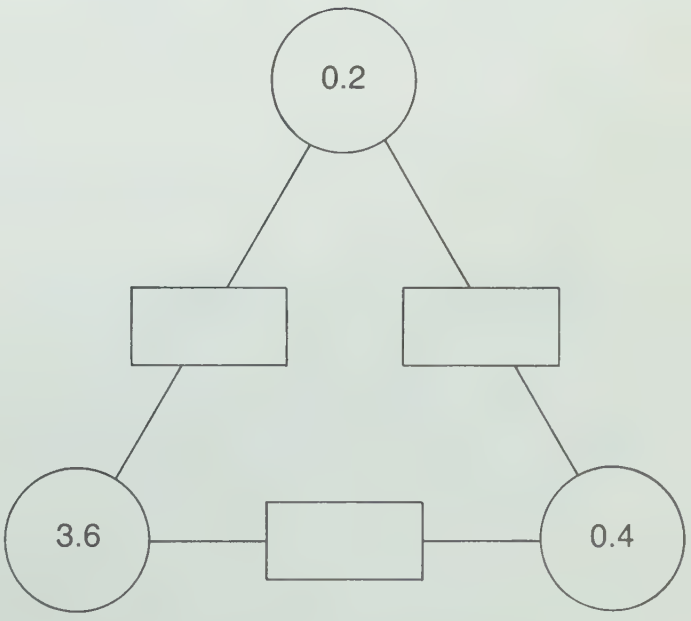
Multiply.

1. $\begin{array}{r} 0.4 \\ \times\ 0.3 \\ \hline \end{array}$ **2.** $\begin{array}{r} 0.3 \\ \times\ 0.6 \\ \hline \end{array}$ **3.** $\begin{array}{r} 0.8 \\ \times\ 0.4 \\ \hline \end{array}$ **4.** $\begin{array}{r} 0.5 \\ \times\ 0.5 \\ \hline \end{array}$

5. $\begin{array}{r} 2.3 \\ \times\ 0.4 \\ \hline \end{array}$ **6.** $\begin{array}{r} 1.9 \\ \times\ 0.6 \\ \hline \end{array}$ **7.** $\begin{array}{r} 6.3 \\ \times\ 0.9 \\ \hline \end{array}$ **8.** $\begin{array}{r} 43.2 \\ \times\ \ 0.7 \\ \hline \end{array}$

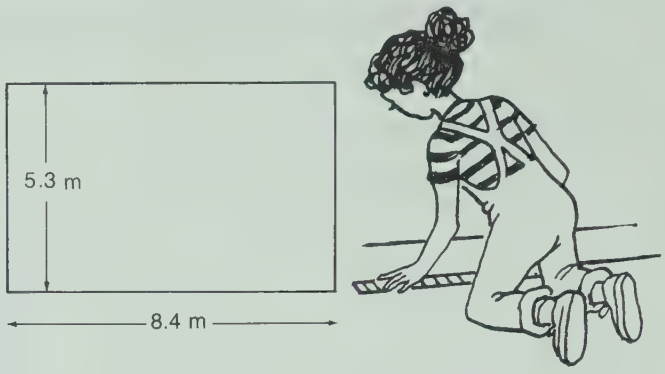
Multiply the factors in the circles. Write the products in the squares.





0.92 0.12

Multiplying Decimal Tenths



Rosa needs carpeting for her room. The floor measures 8.4 m long and 5.3 m wide. How much carpeting will she need to cover the entire floor?

Multiply 8.4 × 5.3.

Multiply by the tenths.

$$\begin{array}{r} {\scriptstyle 1} \\ \mathbf{8.4} \\ \times\ 5.\mathbf{3} \\ \hline \mathbf{252} \end{array}$$

Multiply by the ones.

$$\begin{array}{r} {\scriptstyle 2} \\ \mathbf{8.4} \\ \times\ \mathbf{5}.3 \\ \hline 252 \\ \mathbf{4200} \end{array}$$

Add.

$$\begin{array}{r} 8.4 \\ \times\ 5.3 \\ \hline 252 \\ +\ 4200 \\ \hline 44.52 \end{array}$$

Place the decimal point.

Rosa will need 44.52 m² of carpeting.

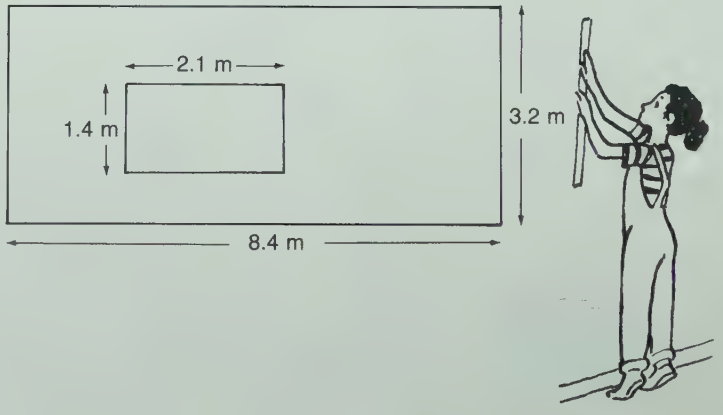
Multiply.

1. $\begin{array}{r} 2.3 \\ \times\ 4.5 \\ \hline \end{array}$ **2.** $\begin{array}{r} 3.8 \\ \times\ 7.2 \\ \hline \end{array}$ **3.** $\begin{array}{r} 5.4 \\ \times\ 3.3 \\ \hline \end{array}$ **4.** $\begin{array}{r} 16.8 \\ \times\ 1.5 \\ \hline \end{array}$

5. $\begin{array}{r} 31.4 \\ \times\ 2.4 \\ \hline \end{array}$ **6.** $\begin{array}{r} 29.3 \\ \times\ 4.3 \\ \hline \end{array}$ **7.** $\begin{array}{r} 63.2 \\ \times\ 12.4 \\ \hline \end{array}$ **8.** $\begin{array}{r} 235.4 \\ \times\ 11.8 \\ \hline \end{array}$

Solve.

9. Rosa also wants to wallpaper a wall that measures 8.4 m by 3.2 m. There is a window in the wall that measures 2.1 m by 1.4 m. How much wallpaper will Rosa need?



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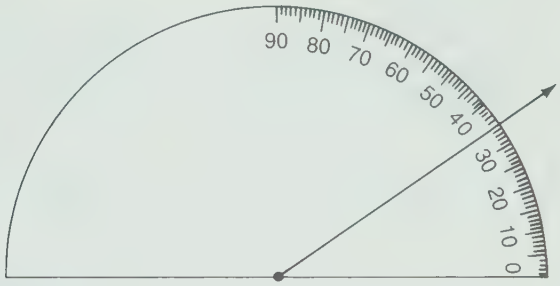
10.35 75.36

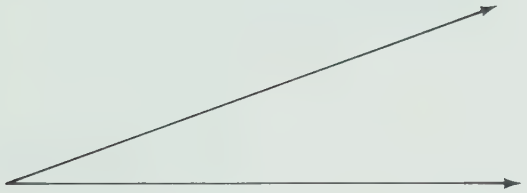
Measuring Angles

The angle measures 35°.

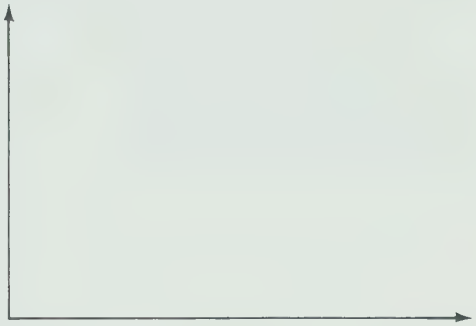


Measure these angles.

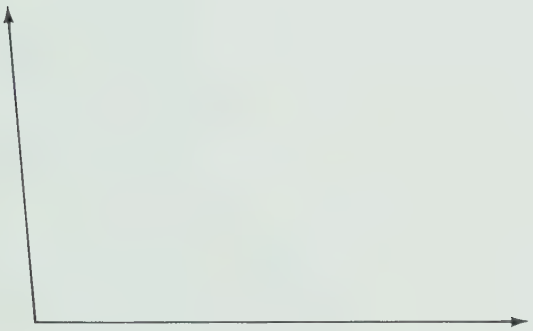
1.



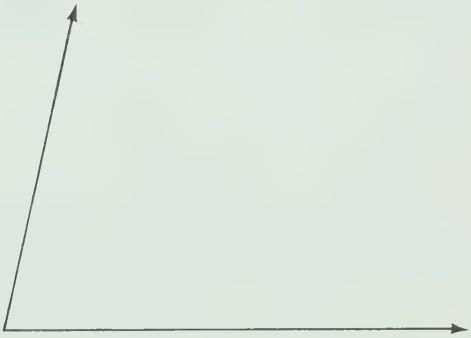
2.



3.



4.



Name the kind of angle shown by the hands on the clocks.

5.

6.

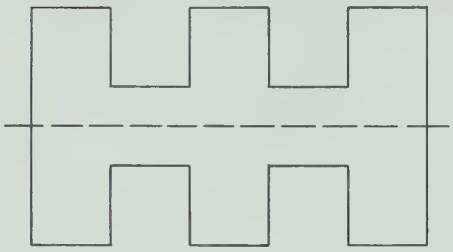
7.

8.

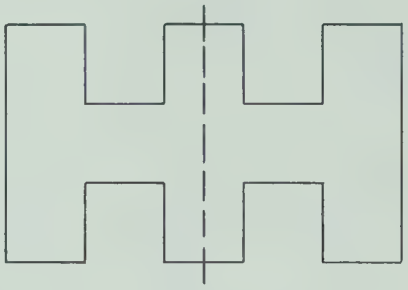
acute 20°

Line Symmetry

This shape has two lines of symmetry.

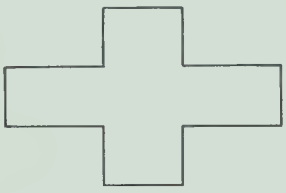


If you fold the shape on this dotted line, you have two matching parts.

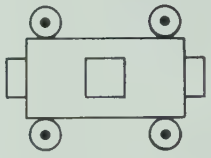


If you fold the shape on this dotted line, you have two matching parts.

Draw lines of symmetry. How many did you find?

1.  ___

2. ___

3.  ___

4. ___

5. ___

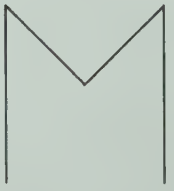
6. ___

7. ___

8. ___

9. ___

10. ___

11.  ___

12. ___

2 lines

Triangles and Quadrilaterals

equilateral triangle

3 equal sides

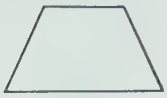
isosceles triangle

2 equal sides

scalene triangle

no equal sides

trapezoid



one pair of parallel sides

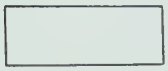
parallelogram

two pairs of parallel sides

rhombus

a parallelogram with 4 sides the same length

rectangle



a parallelogram with 4 right angles

square

a rectangle with 4 sides the same length

Write the names of the numbered shapes.

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

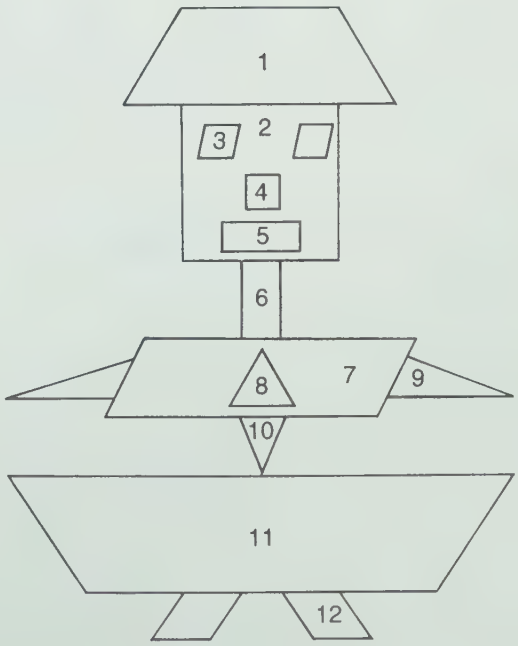
8. _____

9. _____

10. _____

11. _____

12. _____



trapezoid

Dividing by a One-Digit Number

Divide 2398 by 5.

2 is less than 5, so regroup and divide 23 hundreds.

$$\begin{array}{r} \mathbf{4} \\ 5\overline{)2398} \\ \underline{\mathbf{20}} \\ 3 \end{array}$$

3 is less than 5, so regroup and divide 39 tens.

$$\begin{array}{r} \mathbf{47} \\ 5\overline{)2398} \\ \underline{20} \\ 39 \\ \underline{\mathbf{35}} \\ 4 \end{array}$$

4 is less than 5, so regroup and divide 48 ones.

$$\begin{array}{r} 47\mathbf{9}\ \text{R3} \\ 5\overline{)2398} \\ \underline{20} \\ 39 \\ \underline{35} \\ 48 \\ \underline{\mathbf{45}} \\ 3 \end{array}$$

Divide. If you do the problems correctly, each quotient will appear twice.

1. $3\overline{)584}$ **2.** $4\overline{)938}$ **3.** $6\overline{)1166}$ **4.** $5\overline{)4364}$

5. $2\overline{)7939}$ **6.** $6\overline{)5236}$ **7.** $7\overline{)1640}$ **8.** $3\overline{)11\,908}$

Zeros in the Quotient

Divide 2435 by 4.

2 is less than 4, so regroup and divide 24 hundreds.

$$\begin{array}{r} \mathbf{6} \\ 4\overline{)2435} \\ \underline{\mathbf{24}} \\ 0 \end{array}$$

There are 0 hundreds left and 3 is less than 4, so put 0 in the tens place.

$$\begin{array}{r} \mathbf{60} \\ 4\overline{)2435} \\ \underline{24} \\ \mathbf{03} \end{array}$$

Regroup 3 tens 5 ones as 35 ones and divide.

$$\begin{array}{r} 60\mathbf{8}\ \text{R3} \\ 4\overline{)2435} \\ \underline{24} \\ 035 \\ \underline{\mathbf{32}} \\ 3 \end{array}$$

Tick-Tack-Toe

Divide. You win when you have 3 quotients the same in a row.

$7\overline{)3565}$	$3\overline{)1807}$	$8\overline{)3202}$
$4\overline{)2034}$	$6\overline{)3056}$	$9\overline{)3602}$
$2\overline{)6085}$	$5\overline{)15\,211}$	$3\overline{)1529}$

304 R1 508 R2 509 R2

Dividing by a Multiple of 10

Divide 1835 by 20.

```
   9
20 ) 1835
   180
   ---
     3
```

18 is less than 20, so think of 18 hundreds 3 tens as 183 tens. Then, divide.

```
   91 R15
20 ) 1835
   180
   ---
    35
    20
    --
    15
```

Complete the division.

Here is a code.

8 R6	8 R22	71	76 R5	83	90	90 R2	96 R12
I	S	O	R	E	T	D	W

Why doesn't a bicycle go as fast as a car? Divide to solve the riddle.

$30 \overline{)\,246}$	$20 \overline{)\,1800}$		$40 \overline{)\,342}$
		,	

$30 \overline{)\,2700}$	$50 \overline{)\,4812}$	$20 \overline{)\,1420}$

$40 \overline{)\,3600}$	$40 \overline{)\,326}$	$20 \overline{)\,1525}$	$40 \overline{)\,3320}$	$50 \overline{)\,4502}$

Dividing by a Two-Digit Number

Divide 2449 by 48.

$$\begin{array}{r} 4 \\ 48\overline{)2449} \\ \underline{192} \\ 52 \end{array}$$

Think. $50\overline{)2442}$.

52 is greater than the divisor. 4×48 is too small. Try 5×48.

$$\begin{array}{r} 51\ \text{R1} \\ 48\overline{)2449} \\ \underline{240} \\ 49 \\ \underline{48} \\ 1 \end{array}$$

$5 \times 48 = 240$

Complete the division.

Divide. Place the quotients in the puzzle. The last digit of one answer is the first digit of the next.

A.		B.		C.		D.		E.	
A. $32\overline{)6592}$			**B.** $14\overline{)8694}$			**C.** $48\overline{)6480}$			F.
									G.
D. $24\overline{)13\,752}$			**E.** $37\overline{)11\,692}$			**F.** $21\overline{)12\,642}$			
									H.
G. $51\overline{)12\,138}$			**H.** $16\overline{)13\,312}$			**I.** $63\overline{)18\,711}$			I.

206 238 573

Estimating the Quotient

In one year, Sam earned $31 460.
About how much did he earn each week?

Estimate the quotient.

Round the divisor and dividend.

$52 \overline{)\ \$31\ 460}$
$\downarrow \qquad \downarrow$
$50 \overline{)\ \$31\ 000}$

Think $5 \overline{)\ 31}$.
$5 \times 6 = 30$
so use a 6 in the quotient.

$50 \times 6 = 300$
$50 \times 60 = 3000$
$50 \times 600 = 30\,000$
30 000 is close to 31 000, so 600 is the estimate.

Sam earned about $600 each week.

Find the exact quotient.

Divide in the usual way.

$$\begin{array}{r} \$\quad 605 \\ 52 \overline{)\ \$31\ 460} \\ 31\,2 \\ \hline 260 \\ 260 \\ \hline 0 \end{array}$$

Sam earned exactly $605 each week.

Estimate. Then use your estimate to choose the exact quotient from the answer strip. Place the letter of the problem under its exact answer.

D. $21 \overline{)\ 1827}$ **V.** $52 \overline{)\ 3328}$ **E.** $38 \overline{)\ 2812}$

S. $87 \overline{)\ 2697}$ **L.** $51 \overline{)\ 2652}$ **O.** $83 \overline{)\ 1909}$

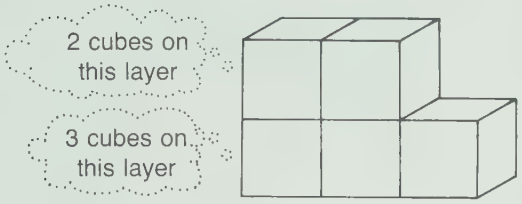
31	23	52	64	74	87

$\frac{30}{90 \overline{)\ 2700}}$ $\frac{90}{20 \overline{)\ 1800}}$

Volume in Cubic Centimetres

Volume is the number of cubic centimetres in a solid.

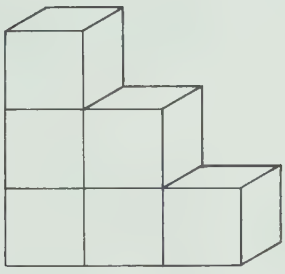
What is the volume of this solid?



There are 5 cubic centimetres.
The volume of the solid is 5 cm^3.

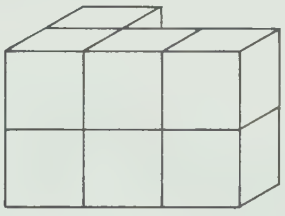
Find the volume in cubic centimetres.

⚀ **1.**



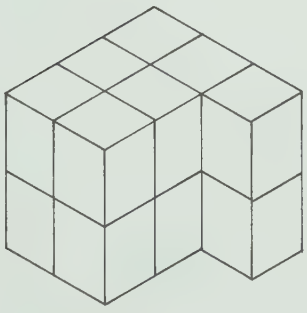
_____

2.



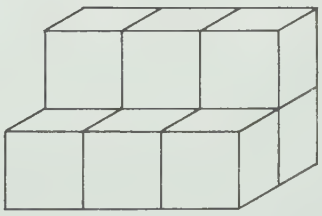
_____

⚁ **3.**



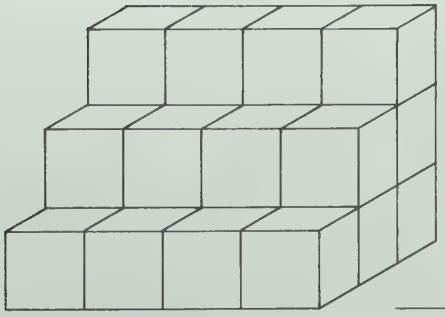
_____

4.



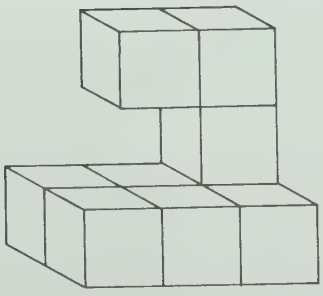
_____

⚂ **5.**



_____

6.

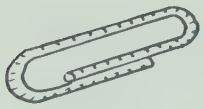


_____

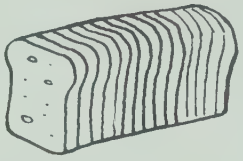
⚂ 14 cm^3 ⚁ 24 cm^3 ⚀ 6 cm^3

Mass in Grams and Kilograms

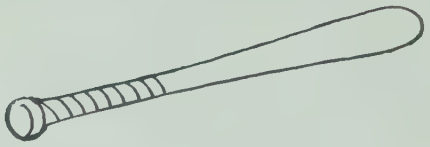
The paper clip has a mass of about 1 g.



The loaf of bread has a mass of about 500 g.



The bat has a mass of about 1 kg.



Circle the best estimate.

1.

A. 1 g
B. 150 g
C. 1 kg

2.

A. 1 g
B. 10 g
C. 1 kg

3.

A. 50 g
B. 500 g
C. 5 kg

4.

A. 3 g
B. 150 g
C. 1.5 kg

Complete the chart. Remember: 1 kg = 1000 g, and 1 g = 0.001 kg.

5.

g	4000			40	3	
kg		8	2.5			3.45

Solve.

6. A pile of pennies has a mass of 285 g. Each penny has a mass of about 3 g. How many pennies are in the pile?

_____

7. A box of rice has a mass of 1 kg. The cook uses 35 g of rice for each serving. Is there enough rice to serve 30 people?

_____

Dividing Ones and Tenths with Regrouping

Divide 5.4 by 3.

Divide the ones.

$$3 \overline{)5.4}$$

1

3

2

Divide the tenths.

$$3 \overline{)5.4}$$

1.8

3

24

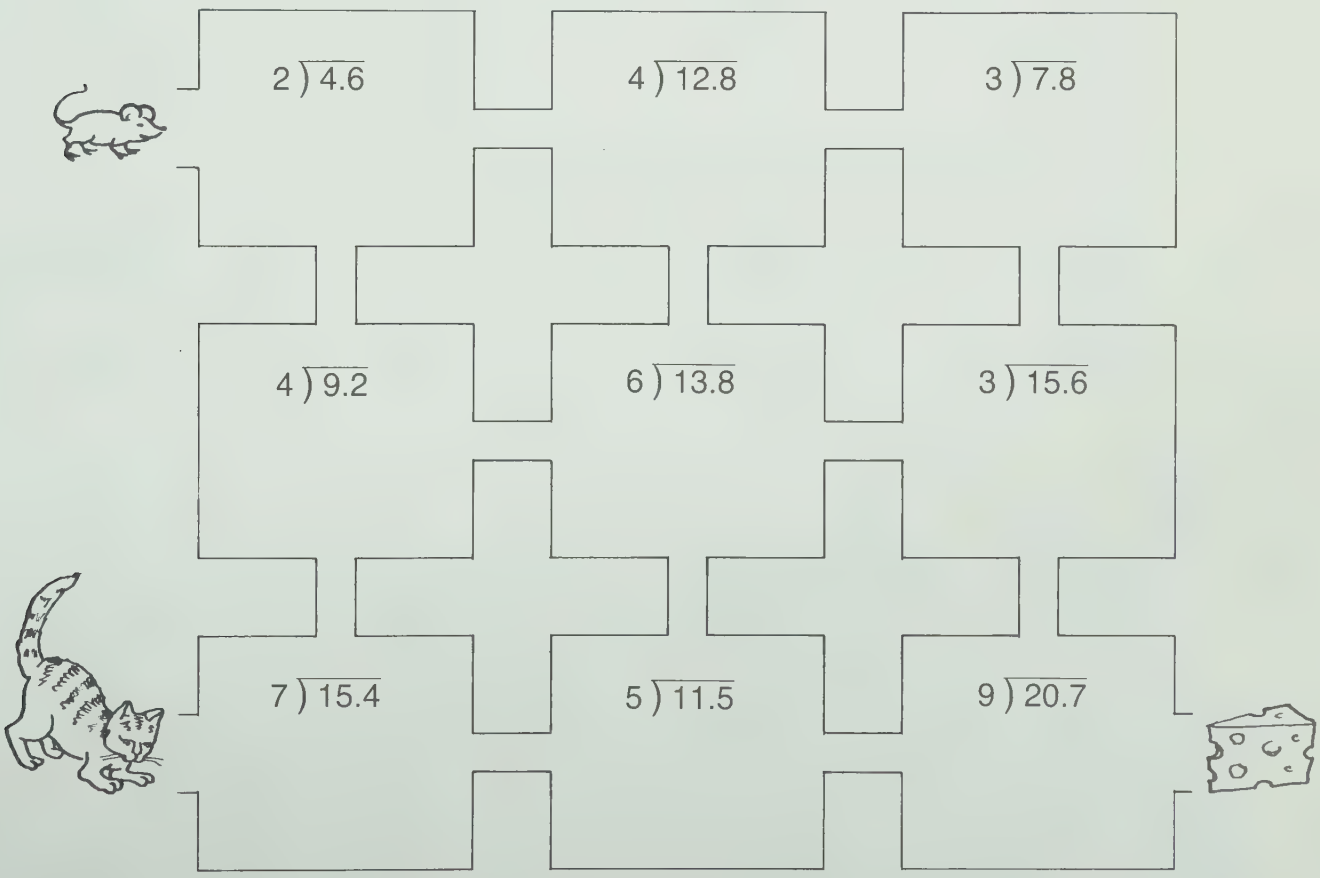
24

0

Line up the decimal points.

Think of 2 ones 4 tenths as 24 tenths.

Divide. The mouse must follow a path where the quotient is 2.3.
Does your mouse find the cheese or the cat?



Quotients Less Than 1

Divide 2.58 by 6.

Divide the ones.

$$6 \overline{)\, 2.58}$$ **0**

The divisor is bigger than the dividend. So the first digit in the quotient is 0.

Divide the tenths.

$$6 \overline{)\, 2.58}$$ 0.**4**

2 4

1

Think of
2 ones 5 tenths
as 25 tenths.

Divide the hundredths.

$$6 \overline{)\, 2.58}$$ 0.4**3**

2 4

18

18

0

Think of
1 tenth 8 hundredths
as 18 hundredths.

In each group, circle the quotient that is less than zero. It is not necessary to do the division.

1.

$2 \overline{)\, 6.3}$

$4 \overline{)\, 3.2}$

$6 \overline{)\, 18.39}$

2.

$3 \overline{)\, 6.3}$

$4 \overline{)\, 9.8}$

$8 \overline{)\, 7.4}$

3.

$5 \overline{)\, 4.2}$

$6 \overline{)\, 7.3}$

$8 \overline{)\, 8.2}$

4.

$2 \overline{)\, 11.8}$

$6 \overline{)\, 5.83}$

$4 \overline{)\, 9.27}$

Divide. Circle the two presents that have the same quotient.

5.

$3 \overline{)\, 0.42}$

6.

$7 \overline{)\, 4.55}$

7.

$4 \overline{)\, 2.36}$

8.

$2 \overline{)\, 1.16}$

9.

$6 \overline{)\, 2.28}$

10.

$5 \overline{)\, 3.30}$

11.

$6 \overline{)\, 3.54}$

12.

$7 \overline{)\, 2.45}$

Using More Decimal Places

Divide 7 by 4.

Remember: Adding zeros after the decimal point does not change the value of a number.

Divide the ones.

$$4\overline{)7}$$
$$\underline{4}$$
$$3$$

Divide the tenths.

$$4\overline{)7.0}$$
$$\underline{4}$$
$$30$$
$$\underline{28}$$
$$2$$

Put in the decimal point.

Think of 3 ones as 30 tenths.

Divide the hundredths.

$$4\overline{)7.00}$$
$$\underline{4}$$
$$30$$
$$\underline{28}$$
$$20$$
$$\underline{20}$$
$$0$$

Think of 2 tenths as 20 hundredths.

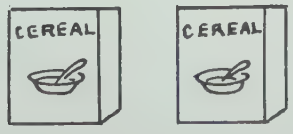
Divide. Use more zeros when needed.

1. $5\overline{)4}$ **2.** $6\overline{)3}$ **3.** $4\overline{)2.6}$ **4.** $4\overline{)3.8}$

5. $4\overline{)5}$ **6.** $8\overline{)5}$ **7.** $8\overline{)0.6}$ **8.** $5\overline{)11.7}$

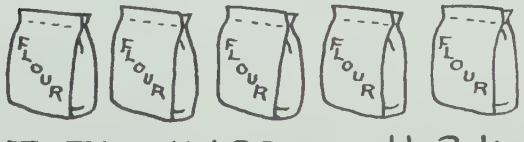
Solve.

9. How much does each box contain?



TOTAL MASS 1.7 kg

10. What is the mass of each bag of flour?



TOTAL MASS 11.3 kg

0.85 kg 1.25 0.8

Dividing by a Two-Digit Number

Study the problems and find the pattern.

$$\begin{array}{r} 23 \\ 16\overline{)368} \\ 32 \\ \hline 48 \\ 48 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 2.3 \\ 16\overline{)36.8} \\ 32 \\ \hline 48 \\ 48 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 0.23 \\ 16\overline{)3.68} \\ 32 \\ \hline 48 \\ 48 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 0.023 \\ 16\overline{)0.368} \\ 32 \\ \hline 48 \\ 48 \\ \hline 0 \end{array}$$

This is Lisa's math test. Rewrite and correct any problems Lisa did incorrectly.

Name Lisa

1. $\begin{array}{r} 0.4 \\ 15\overline{)6.3} \end{array}$

2. $\begin{array}{r} 1.2 \\ 34\overline{)40.8} \end{array}$

3. $\begin{array}{r} 3.70 \\ 15\overline{)5.55} \end{array}$

4. $\begin{array}{r} 13.5 \\ 14\overline{)18.9} \end{array}$

5. $\begin{array}{r} 68.0 \\ 12\overline{)8.16} \end{array}$

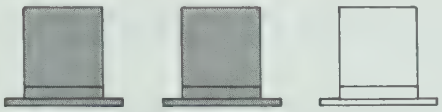
6. $\begin{array}{r} 0.6 \\ 23\overline{)13.8} \end{array}$

7. $\begin{array}{r} 0.42 \\ 15\overline{)6.3} \end{array}$

8. $\begin{array}{r} 17.5 \\ 21\overline{)36.75} \end{array}$

9. $\begin{array}{r} 2.2 \\ 35\overline{)70.70} \end{array}$

Writing Fractions

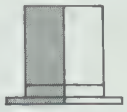


$\frac{2}{3}$ of the hats are shaded.

numerator

$\frac{2}{3}$ is read **two-thirds**.

denominator

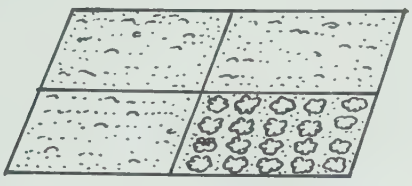


$\frac{1}{2}$ of the hat is shaded.

$\frac{1}{2}$ is read **one-half.**

Complete each sentence by writing a fraction.

1.

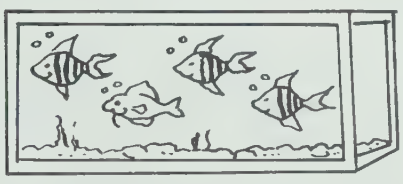


_____ of the garden is planted.

2.

_____ of the vases have flowers.

3.



_____ of the fish are striped.

4.

_____ of the balls are soccer balls.

Write the fraction.

5. 9 roses are in a vase.
5 of them are pink. _____

6. 5 dolls are in a toy box.
2 of them are broken. _____

Write the fractional part of each word.
Put the parts together to write a message.

Example: $\frac{1}{2}$ of GAME is GA.

7. $\frac{1}{4}$ of WALL _____

8. $\frac{2}{3}$ of ELK _____

9. $\frac{1}{6}$ of LIVELY _____

10. $\frac{2}{5}$ of DODGE _____

11. $\frac{1}{2}$ of NO _____

12. $\frac{1}{5}$ of ELBOW _____

_____ _____ _____ _____ _____ _____ _____ _____

W $\frac{5}{9}$ $\frac{1}{4}$

Finding Equivalent Fractions

Find equivalent fractions for $\frac{1}{3}$.

Multiply by the numerator and the denominator by the same number.

Multiply by 2. Multiply by 3.

$\frac{1}{3} = \frac{2}{6}$ $\frac{1}{3} = \frac{3}{9}$

Find the equivalent fractions for $\frac{18}{24}$.

Divide the numerator and the denominator by the same number.

Divide by 2. Divide by 3.

$\frac{18}{24} = \frac{9}{12}$ $\frac{9}{12} = \frac{3}{4}$

Multiply or divide to find equivalent fractions.

1. $\frac{1}{4}$ | 1 × 2 | 1 × 3 | 1 × 4 | ...

4 × 2 | 4 × 3 | 4 × 4 | ...

2 × 2 | 2 × 3 | ...

2. $\frac{12}{18}$ | 12 ÷ 2 | 6 ÷ 3

18 ÷ 2 | 9 ÷ 3

18 ÷ 2 | 9 ÷ 3

3. $\frac{2}{5}$ | | | | |

5 × 2 | 5 × 3 | ...

4 × 2 | 4 × 3 | ...

4. $\frac{18}{42}$ | | |

42 ÷ 2 | 9 ÷ 3

30 ÷ 2 | 15 ÷ 5

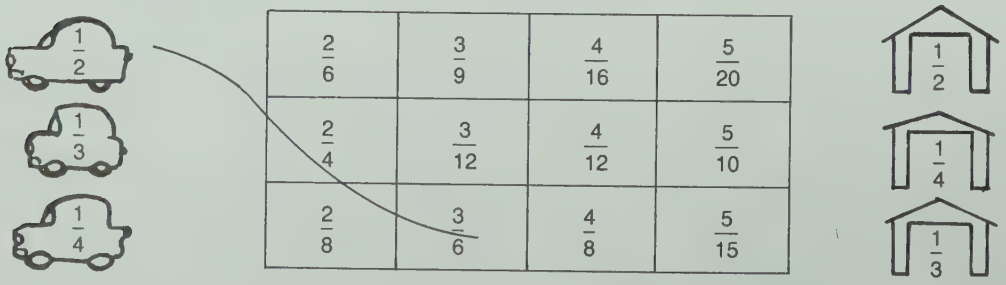
5. $\frac{4}{7}$ | | | | |

7 × 2 | 7 × 3 | ...

6. $\frac{30}{50}$ | | |

30 ÷ 2 | 25 ÷ 5

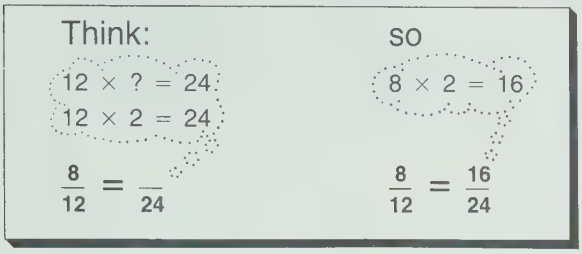
Draw 3 paths from start to finish. For each path, connect the fractions that are equivalent. The first path is started for you.

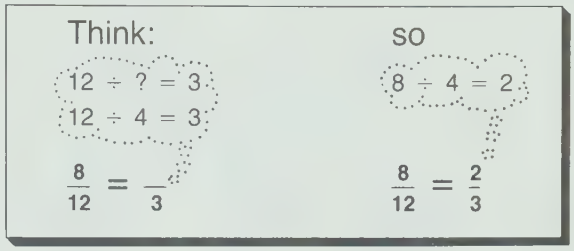


$\frac{2}{8}$, $\frac{3}{12}$, $\frac{4}{16}$, $\frac{5}{20}$

Finding the Missing Term

Here's how to find the missing term in a pair of equivalent fractions.





Find the missing term.

1. $\frac{1}{2} = \frac{\quad}{12}$ **2.** $\frac{16}{20} = \frac{4}{\quad}$ **3.** $\frac{4}{7} = \frac{8}{\quad}$

4. $\frac{16}{40} = \frac{2}{\quad}$ **5.** $\frac{3}{4} = \frac{6}{\quad}$ **6.** $\frac{36}{63} = \frac{\quad}{7}$

Complete the equivalent fractions in each chart.

7.

3/5	6/	/40	9/

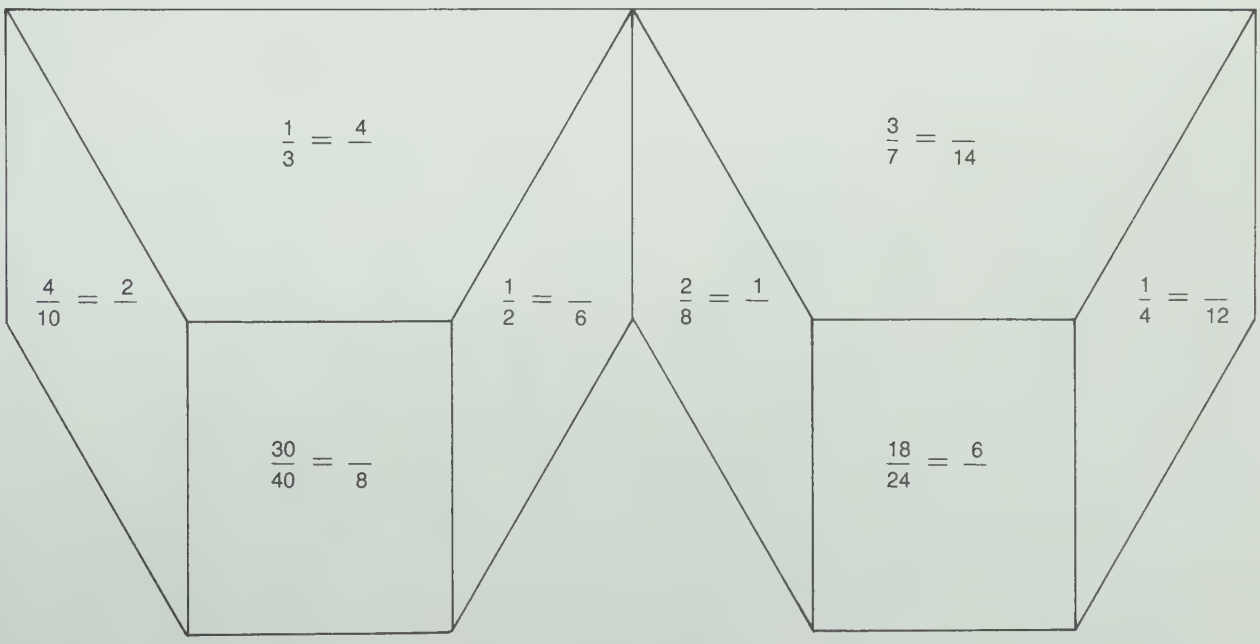
8.

/8	1/	4/16	5/

9.

1/	/30	2/6	/12

Find the missing terms. Color the space RED if the missing term is a 5 or less. Color the space BLUE if the missing term is greater than 5.

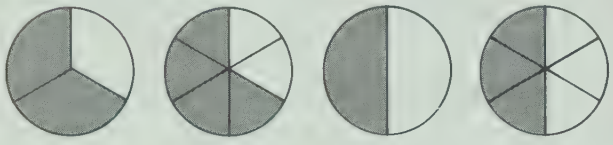


10, 24, 15 6 5

Comparing Fractions

Compare $\frac{2}{3}$ and $\frac{1}{2}$.

First write equivalent fractions with common denominators.



$\frac{2}{3} = \frac{4}{6}$ $\quad$ $\frac{1}{2} = \frac{3}{6}$

Then compare the numerators.

$4 > 3$

$\frac{4}{6} > \frac{3}{6}$

so $\frac{2}{3} > \frac{1}{2}$

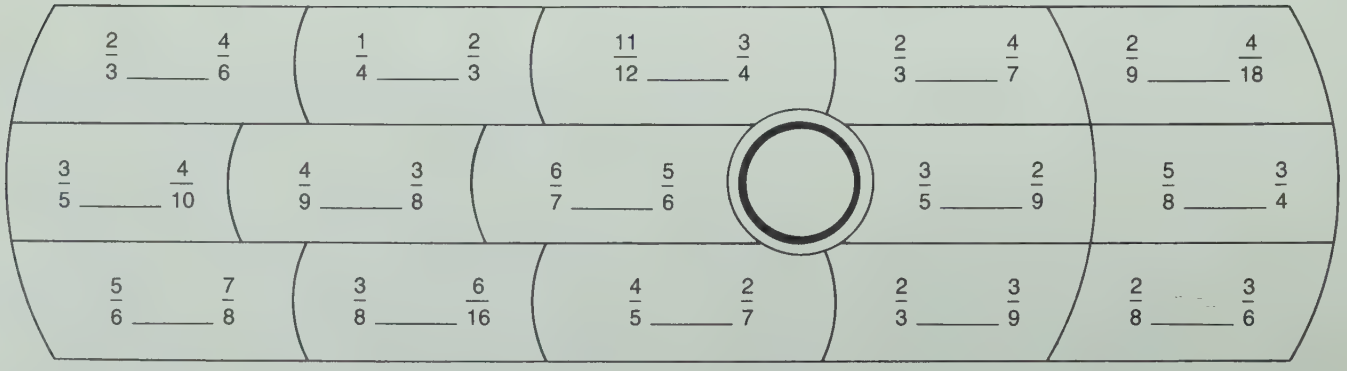
Use $<$, $>$, or $=$ to make true statements.

1. $\frac{1}{8}$ _____ $\frac{1}{6}$ $\quad$ **2.** $\frac{4}{5}$ _____ $\frac{2}{10}$ $\quad$ **3.** $\frac{1}{4}$ _____ $\frac{2}{8}$

4. $\frac{3}{7}$ _____ $\frac{2}{3}$ $\quad$ **5.** $\frac{3}{5}$ _____ $\frac{5}{9}$ $\quad$ **6.** $\frac{3}{5}$ _____ $\frac{9}{15}$

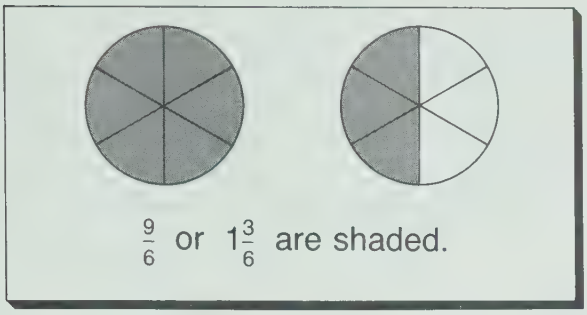
7. $\frac{2}{3}$ _____ $\frac{3}{4}$ $\quad$ **8.** $\frac{5}{6}$ _____ $\frac{12}{18}$ $\quad$ **9.** $\frac{3}{8}$ _____ $\frac{4}{12}$

Use $<$, $>$, or $=$ to make true statements. Then, shade in the spaces where your answer is $>$.



$>$ $\quad$ $>$ $\quad$ $>$

Changing Improper Fractions



$\frac{9}{6}$ or $1\frac{3}{6}$ are shaded.

Change $\frac{9}{6}$ to a mixed number.

$$6\overline{)9} \quad 1 \text{ (1 whole circle)}$$
$$-6 \quad \text{(3 sixths of a circle.)}$$
$$3$$

Write each improper fraction as a number in mixed form or as a whole number.

1. $\frac{9}{2} =$ _____ **2.** $\frac{7}{5} =$ _____ **3.** $\frac{8}{4} =$ _____ **4.** $\frac{5}{3} =$ _____

5. $\frac{18}{5} =$ _____ **6.** $\frac{9}{8} =$ _____ **7.** $\frac{24}{12} =$ _____ **8.** $\frac{37}{7} =$ _____

9. $\frac{59}{6} =$ _____ **10.** $\frac{110}{9} =$ _____ **11.** $\frac{113}{5} =$ _____ **12.** $\frac{125}{3} =$ _____

Write a number in mixed form.

13. 3 cups of flour are needed for each recipe. How many recipes could you make with 8 cups?

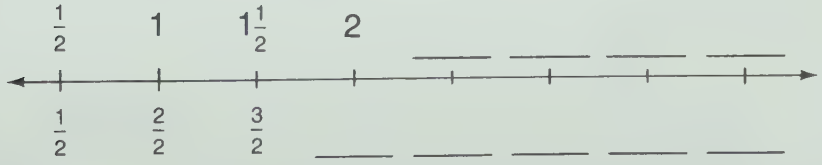
_____

14. Each sandwich is cut into 4 pieces. How many sandwiches did Bill eat if he ate 7 pieces?

_____

Name the points on the number line. Use improper fractions and mixed numbers.

15.



$2\frac{2}{3}$ $3\frac{3}{5}$ $4\frac{1}{2}$ $9\frac{5}{6}$

Adding and Subtracting Fractions

Add the fractions.
Add the whole numbers.
Rename the mixed number.

$$\begin{array}{r} 1\frac{2}{3} \\ +\ 2\frac{2}{3} \\ \hline 3\frac{4}{3} \end{array} \quad 3 + \frac{3}{3} + \frac{1}{3} \quad 4\frac{1}{3}$$

Rename $4\frac{1}{4}$ as $3\frac{5}{4}$.

Subtract the fractions.
Subtract the whole numbers.

$$\begin{array}{r} 4\frac{1}{4} \\ -\ 2\frac{3}{4} \\ \hline \end{array} \quad 3 + \frac{4}{4} + \frac{1}{4} \quad \begin{array}{r} 3\frac{5}{4} \\ -\ 2\frac{3}{4} \\ \hline 1\frac{2}{4} \end{array}$$

Add or subtract. Then match the problems that have the same answers.

1. $2\frac{3}{8} + 2\frac{7}{8}$

2. $1\frac{4}{5} + 1\frac{3}{5}$

3. $2\frac{3}{4} + \frac{3}{4}$

4. $2\frac{5}{12} + 3\frac{11}{12}$

5. $7 - 3\frac{3}{5}$

6. $7\frac{1}{4} - 3\frac{3}{4}$

7. $10\frac{3}{12} - 3\frac{11}{12}$

8. $9\frac{1}{8} - 3\frac{7}{8}$

Solve.

9. The roast should cook for $3\frac{1}{4}$ h.
It has been in the oven $2\frac{3}{4}$ h.
How much longer should it cook?

_____

10. Justin baby-sat $2\frac{1}{2}$ h on Friday and $3\frac{1}{2}$ h on Sunday. How many hours did he baby-sit in all?

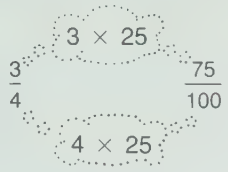
_____

$3\frac{2}{4}$ $5\frac{2}{8}$ $2\frac{2}{4}$

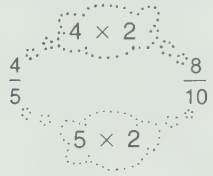
Equivalent Fractions and Decimals

To convert a fraction to a decimal, first write an equivalent fraction with 10 or 100 as the denominator. Then convert the equivalent fraction to a decimal.

Write a decimal equivalent to $\frac{4}{5}$.



Write a decimal equivalent to $\frac{3}{4}$.



Complete.

1. $\frac{1}{2} = \frac{\quad}{10}$ or the decimal _____

2. $\frac{1}{4} = \frac{\quad}{100}$ or the decimal _____

3. $\frac{3}{4} = \frac{\quad}{100}$ or the decimal _____

4. $2\frac{3}{5} = 2\frac{\quad}{10}$ or the decimal _____

Match each fraction with its equivalent decimal.

$4\frac{1}{4}$	4.4
$4\frac{7}{10}$	4.25
$4\frac{2}{5}$	4.75
$4\frac{3}{4}$	4.7

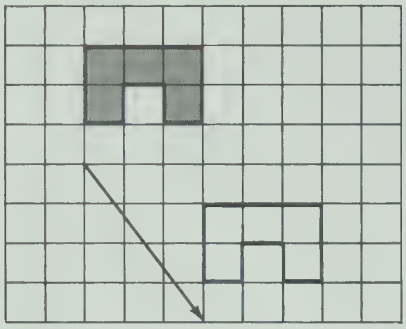
$2\frac{1}{2}$	2.25
$2\frac{1}{4}$	2.2
$2\frac{1}{5}$	2.8
$2\frac{4}{5}$	2.5

Write a decimal that is equivalent. Do you see a pattern?

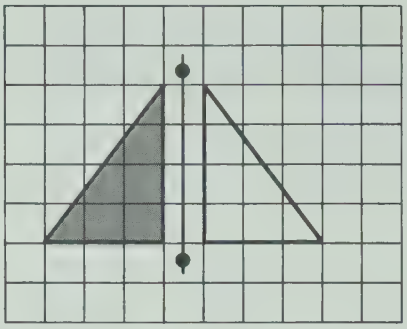
Fraction	Decimal
$\frac{1}{4} =$	_____
$\frac{2}{4} =$	_____
$\frac{3}{4} =$	_____

Fraction	Decimal
$\frac{1}{5} =$	_____
$\frac{2}{5} =$	_____
$\frac{3}{5} =$	_____
$\frac{4}{5} =$	_____

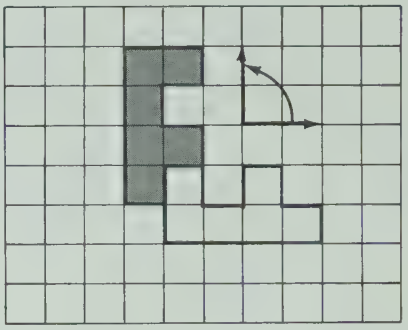
Identifying Slides, Flips, and Turns



The slide arrow shows the direction and distance.



Flip the shape using the points on the flip line.

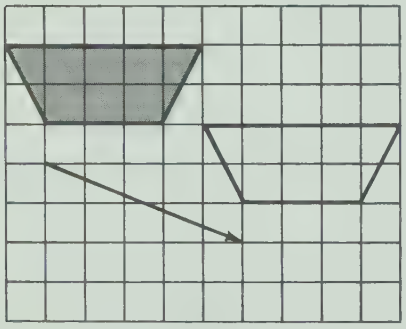


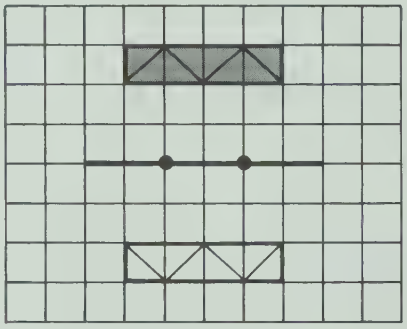
The turn angle shows how much a shape turns about the turn centre.

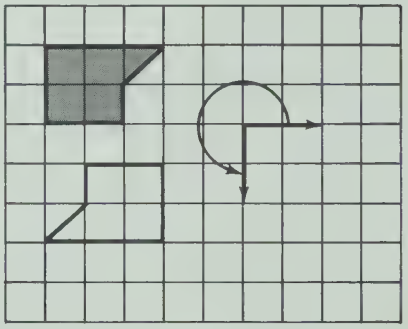
1. Is the light shape the slide image of the dark shape for the slide arrow shown?

2. Is the light shape the flip image of the dark shape for the flip line shown?

3. Is the light shape the turn image of the dark shape for the turn angle shown?



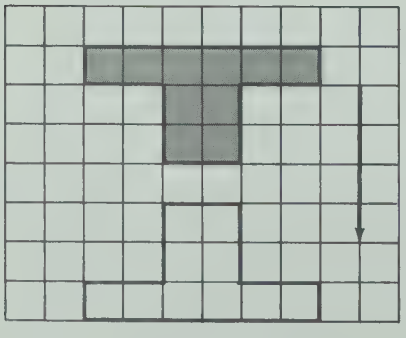


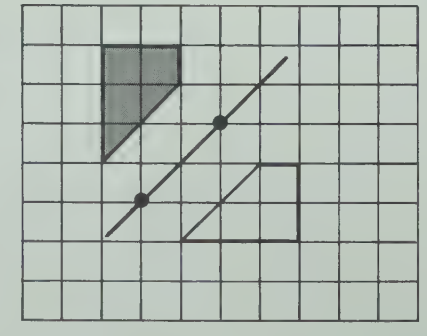


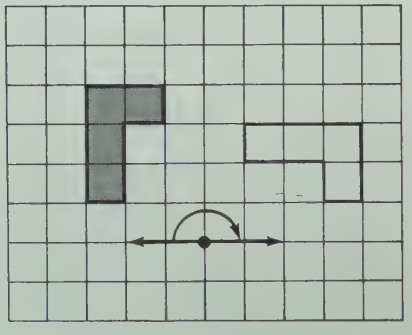
4. Is the light shape the slide image of the dark shape for the slide arrow shown?

5. Is the light shape the flip image of the dark shape for the flip line shown?

6. Is the light shape the turn image of the dark shape for the turn angle shown?







Yes

Writing Equivalent Ratios

Mark ran 3 km in 45 min. His ratio of distance to time is 3:45. Read this **3 to 45.**

Ingrid ran 1 km in 15 min. Her ratio of distance to time is 1:15. Read this **1 to 15.**

To find an equivalent ratio, multiply or divide the numerator and denominator by the same number.

$$\frac{1}{15} \overset{1 \times 3}{=} \frac{3}{45} \quad (15 \times 3)$$

The ratios of 1:15 and 3:45 are equivalent.

Complete. Use patterns or multiplication.

1. $\frac{1}{4} = \frac{2}{8} = ____ = ____ = ____$

2. $\frac{3}{5} = \frac{6}{10} = ____ = ____ = ____$

3. $\frac{6}{7} = \frac{12}{14} = ____ = ____ = ____$

4. $\frac{8}{2} = \frac{16}{4} = ____ = ____ = ____$

Complete these ratio tables.

5.

shoes	2				
pairs	1				

6.

kilograms	1				
grams	1000				

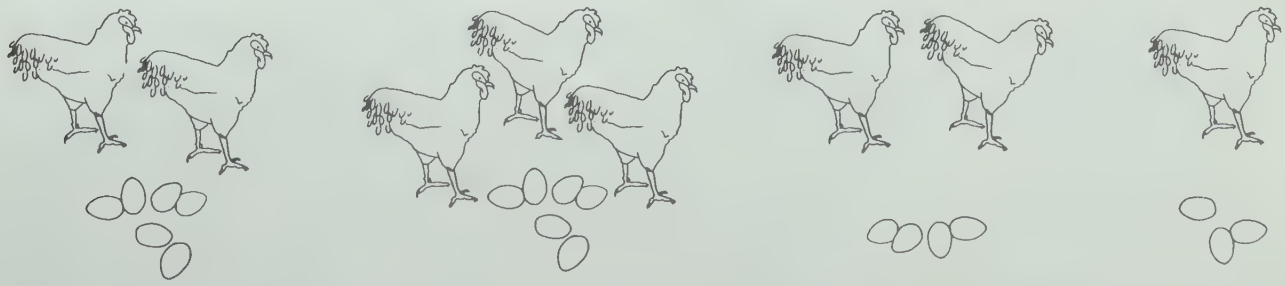
7.

octopus	1				
legs	8				

8.

eggs	12				
dozen	1				

Match the pictures that show equivalent ratios.



$\frac{3}{12}, \frac{4}{16}, \frac{5}{20}$

$\frac{2}{4}, \frac{3}{6}, \frac{4}{8}, \frac{5}{10}$

Finding the Missing Term in Equivalent Ratios

Colette is selling lemonade. She needs 7 lemons to make 3 L of lemonade. How many lemons does she need to make 12 L of lemonade?

Write.

$\frac{7}{3} = \frac{_}{12}$

Think.

$\frac{7}{3} = \frac{_}{12}$

$3 \times ? = 12$

$3 \times 4 = 12$

Multiply.

$\frac{7}{3} \times \frac{4}{4} = \frac{28}{12}$

Sometimes you divide to find the missing term.

Write.

$\frac{15}{20} = \frac{3}{_}$

Think.

$\frac{15}{20}$ $15 \div ? = 3$ $\frac{3}{_}$

$15 \div 5 = 3$

Divide.

$\frac{15}{20} = \frac{3}{4}$

$20 \div 5$

Complete. Cross out the digits of each answer in the strip.
If you do the problems correctly, you will cross out every digit.

1. $\frac{3}{4} = \frac{_}{20}$ **2.** $\frac{2}{5} = \frac{12}{_}$ **3.** $\frac{4}{8} = \frac{_}{2}$

4. $\frac{5}{15} = \frac{1}{_}$ **5.** $\frac{1}{3} = \frac{_}{21}$ **6.** $\frac{4}{4} = \frac{60}{_}$

7. $\frac{3}{2} = \frac{9}{_}$ **8.** $\frac{24}{6} = \frac{_}{2}$ **9.** $\frac{8}{7} = \frac{16}{_}$

0	0	1	1	1	3	3	4	5	6	6	7	8

Solve.

10. Colette is also selling cookies. She charges 25¢ for 2 cookies. How much does she charge for 6 cookies?

_____

11. Colette can fill 12 glasses with 2 L of lemonade. How many glasses can she fill with 8 L of lemonade?

_____

9 3 15

Finding the Information Needed

How would you find this information?

1. the population of your city, town, or country

_____

2. the total precipitation in your area last year

_____

3. the world high-jump record

_____

4. the Olympic shot-put record

_____

5. the distance around your schoolroom

_____

6. the air distance from Montreal to Winnipeg

_____

7. the favorite song of your class

_____

8. the total number of students in your school

_____

9. the NHL player with the greatest number of career goals

_____

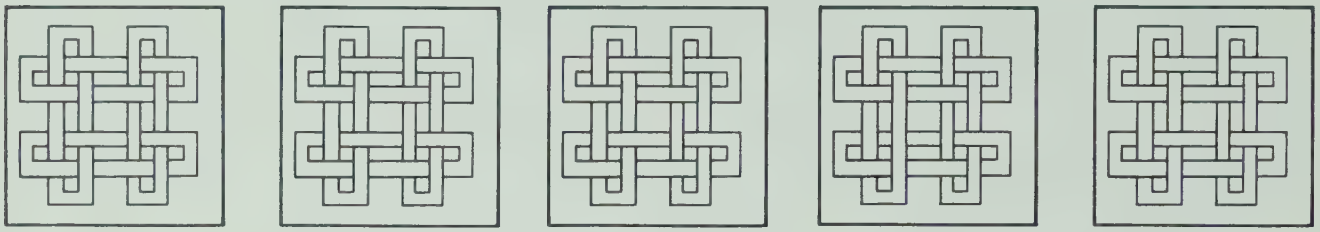
10. the average mass of a full-grown African bull elephant

_____

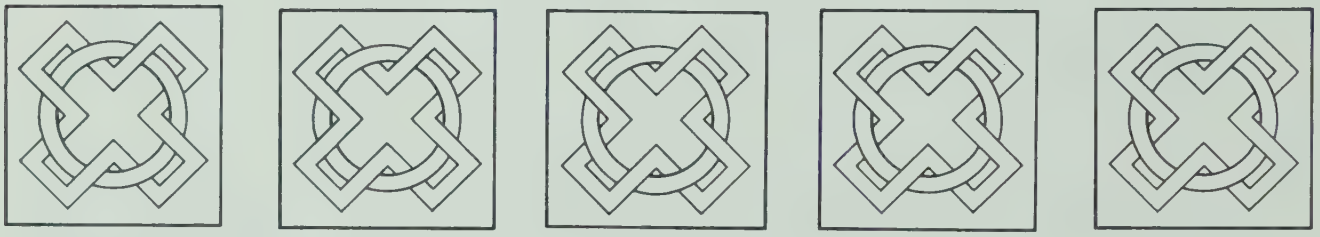
How Well Do You See?

In each row, check the figure that is different.

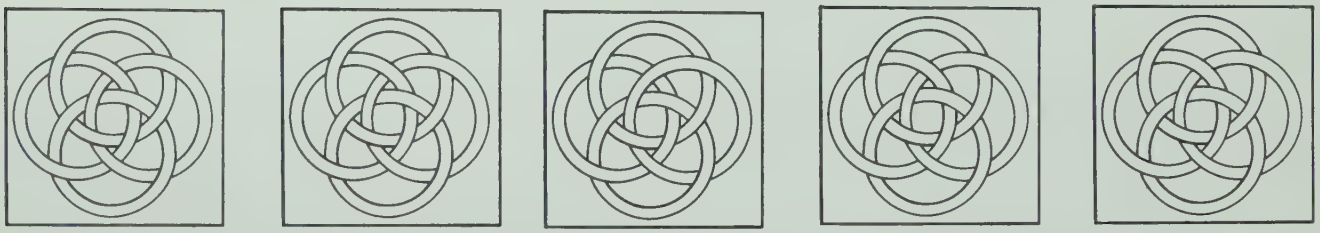
1.



2.



3.



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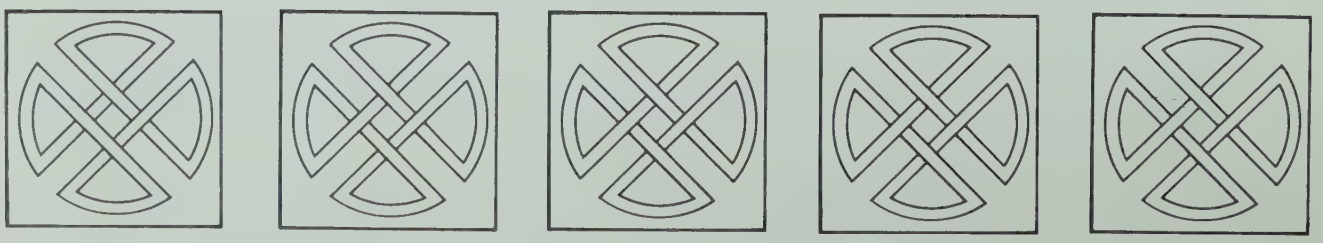


Missing Information

Check the fact you need. Then solve the problem.

Facts

1. There are 2 fifth-grade classrooms. One has 32 students. How many fifth graders are there in all?

_____

a. There are 13 teachers in the school.
b. The first grade has 68 children.
c. The other fifth-grade class has 28 students.

2. Mrs. Rowan works part-time. Last week she worked 28 h. How much did she earn?

_____

a. She sold 135 pairs of shoes.
b. She makes $8.75 in one hour.
c. She spent $4.50 for lunch.

3. Earle used 3 rolls of film on his trip. How many pictures did he take?

_____

a. Each roll has 24 pictures.
b. It cost $15.00 for developing.
c. His album has 36 pages.

4. Astrid is going on holidays with her family. They are leaving in 3 weeks. Astrid has been saving her money to buy souvenirs. How much more does she need to have $30.00?

_____

a. Her family is going to the Maritimes.
b. They are going for 3 weeks.
c. She has $24.30 now.

5. Dino wants to buy a 10-speed bike that costs $105.95. How much more does he need?

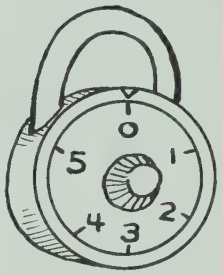
_____

a. There is another bike for $98.20.
b. His mother's bike has 5 speeds.
c. He has $81.30.

Finding the Number of Possibilities

1. There are four marbles in a bag. There is one of each color—red, green, blue, and yellow. How many different ways of picking them one at a time are possible?

_____



2. This type of combination lock has six numerals on it. To open the lock requires three moves—right, left, right. For example, one combination is right to 3, left to 0, right to 5. How many different combinations are possible?

_____

3. Some licence plates have five characters. If the first one must be a letter and the others must be digits, how many combinations are possible? Give your answer as a product, for example, $21 \times 9 \times 3$.

_____

4. How many different combinations of four playing cards can be dealt from a full deck of 52? Hint: How many choices are there for the first card? Give your answer as a product.

_____

Organizing and Displaying Information

1. The marks from a math test are given. Organize the marks and show the information on a bar graph.

75	95	80	75	90	55	85
95	80	90	85	85	65	70
75	90	65	65	70	75	95
100	85	70	100	55	60	85

2. How many students took the test? _____

3. What was the most common mark? _____

4. Do you think the test was hard? _____

5. How many problems were on the test? _____

Giving the Most Reasonable Answer

Sumi has 23¢. She wants to share it with her 3 sisters. How much will each girl receive?

$$4\overline{)23}\quad 5\text{ R}3$$
$$20$$
$$3$$

Each girl will receive 5¢. There will be 3¢ left.

Chester has 23 h to spend on 4 equally important projects. How much time can he spend on each?

$$4\overline{)23}\quad 5\text{ R}3$$
$$20$$
$$3$$

3 out of 4 remaining → $\frac{3}{4}$

He can spend $5\frac{3}{4}$ h on each project.

23 people are going on a trip. If a car seats 4 people, how many cars are needed?

$$4\overline{)23}\quad 5\text{ R}3 \rightarrow 6$$
$$20$$
$$3$$

6 cars are needed.

Give the most reasonable answer.

1. Four girls helped clean the garage. They were given a box of 27 records to share. How many did each receive?

_____

2. One hundred fifty-three people are going on a bus trip. Each bus holds 46 people. How many buses are needed?

_____

3. Jan and Lucille have 3 oranges to share. How many will each receive?

_____

4. Marge's uncle gave her a box of 29 foreign stamps to share with her brother. How many stamps will each receive?

_____

5. Mrs. Burton is putting 162 books on the shelves. Each shelf holds 35 books. How many shelves will she use?

_____

6. Louie has 10 cookies. He is going to share them with 3 friends. How many will each receive?

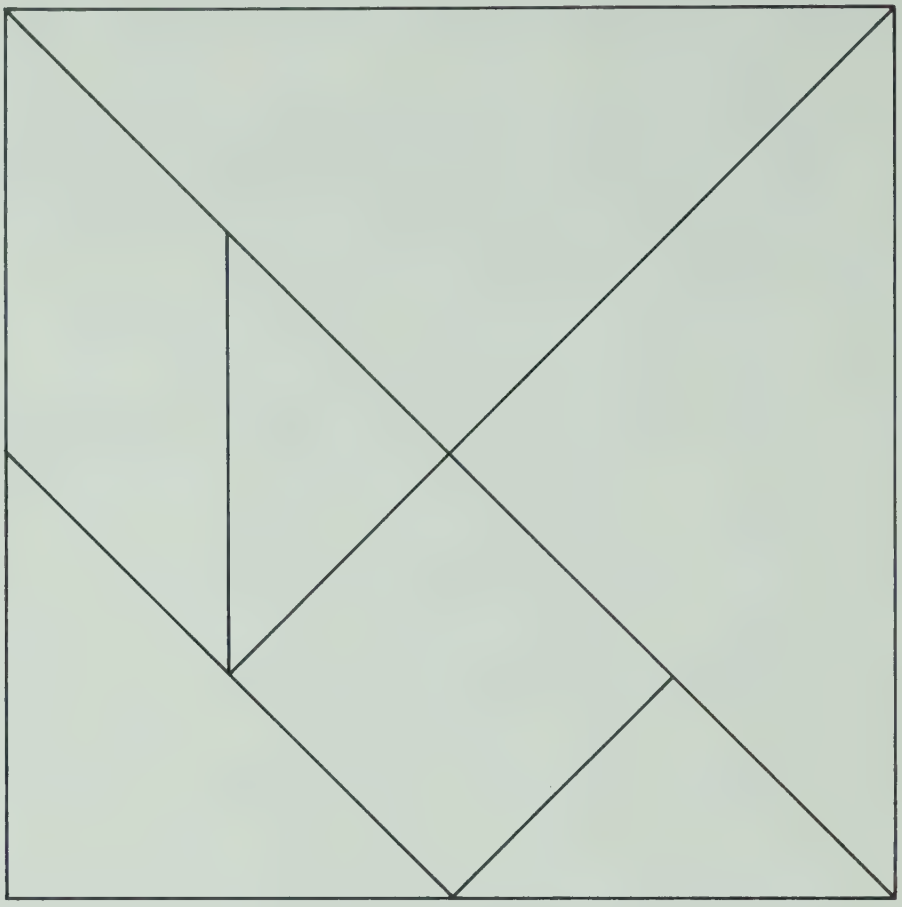
_____

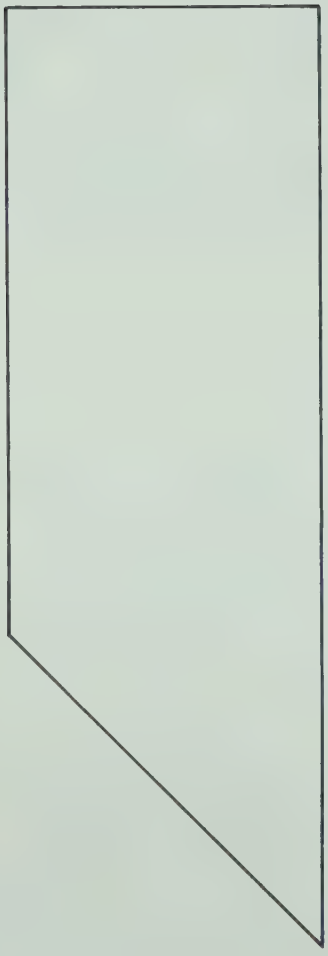
Organizing Information

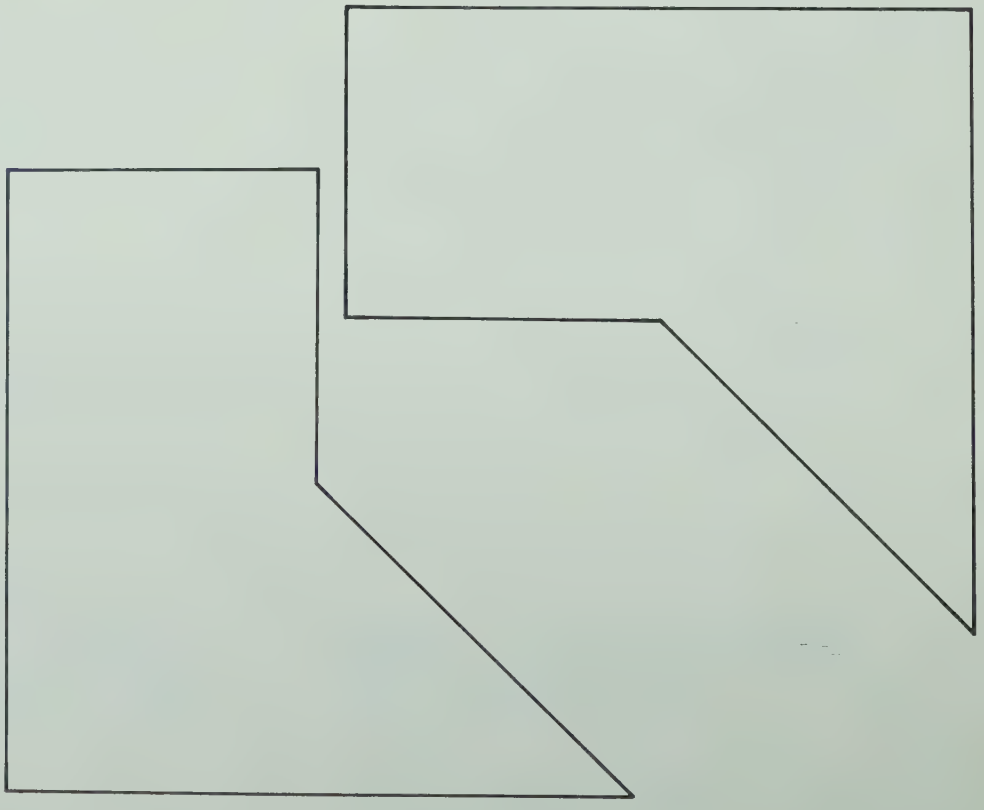
There are 12 people at a meeting. If every person shakes hands with every other person, how many handshakes will there be? Hint: Draw diagrams, make a table, and start with simpler problems.

Working With a Model

Cut out the tangram pieces. Use three pieces to make each shape below.







Writing Equations

Write an equation for each problem. Answer all questions.

1. Six times a number equals 36. What is the number?

_____

2. Fourteen plus a number equals 27.

_____

3. The product of 9 and some number is 27.

_____

4. The sum of 79 and some number is 142.

_____

5. The quotient of a number dividend by 7 is 9.

_____

6. The sum of 3, 4, and 5 is what number?

_____

7. How much greater is 72 than 51?

_____

8. Mary's age plus 3 equals John's age. Who is older?

_____

9. Phil has 8 fish in his tank. Pat has 3 more fish than Phil. How many fish does Pat have?

_____

10. Anne has 6 tomato plants in her garden. Each plant has 10 green tomatoes. How many tomatoes are there in all?

_____

Solving Problems in Two or More Steps

Prices (in dollars)

GLASSINE ENVELOPES			
Size	100	200	500
1	1.40	2.60	5.25
2	1.60	2.90	6.00
3	1.75	3.15	6.50
4	2.05	3.70	7.25

STAMP HINGES (1000)		
1 package	12 packages	50 packages
0.95	10.50	40.50

STAMP TONGS		
#901	3.15 each pair	3 pairs for 8.80
#903	2.10 each pair	3 pairs for 5.85

Add $2.00 postage for orders under $25.00, $3.00 for orders $25.00 or more.

The chart shows the pieces for some of the items stamp collectors use. Find the total amount of each order.

1. 200 glassines, size 3
5 packages of hinges
1 pair of #903 tongs

_____

2. 100 glassines, size 4
200 glassines, size 1
3 packages of hinges

_____

3. 3 pairs 903 tongs
500 glassines, size 4
100 glassines, size 1

_____

4. 12 packages of hinges
3 pairs of #901 tongs
100 glassines, size 4
100 glassines, size 2

_____

Solving Equations

Write and solve an equation for each exercise.

1. A number plus 6 equals 14.

_____

2. The product of 5 and a number is 30.

_____

3. The sum of 17 and some number is 62.

_____

4. What is the quotient of 56 divided by 7?

_____

5. A number times 9 is 81.

_____

6. The taxi company has 31 cars. Fourteen of them are at the airport. How many are not at the airport?

_____

7. Roberta drove her taxi to the garage for gas. The tank holds 51 L. It took 39 L to fill it. How many litres were in the tank before the fill-up?

_____

8. If Sam had $12 more, he could buy a bicycle costing $89.95. How much money does he have?

_____

Skills Practice

Solve each problem.

1. Sunday morning, Frank made breakfast for his family. He cooked 2 eggs for each of 5 people, and 10 slices of bacon. He also made 8 pieces of toast. How many eggs did he use?

_____

2. After breakfast, Frank's brother washed 10 plates, 5 glasses, and 1 frying pan. He also washed 12 forks, 7 knives, and 3 spoons. How many pieces of cutlery did he wash?

_____

3. If you have $■ and earn $▲ more, how much money do you have? Circle the operation you would use.

+ − × ÷

4. Kathy has 13 foreign dolls in her collection. How many more does Karin have?

_____

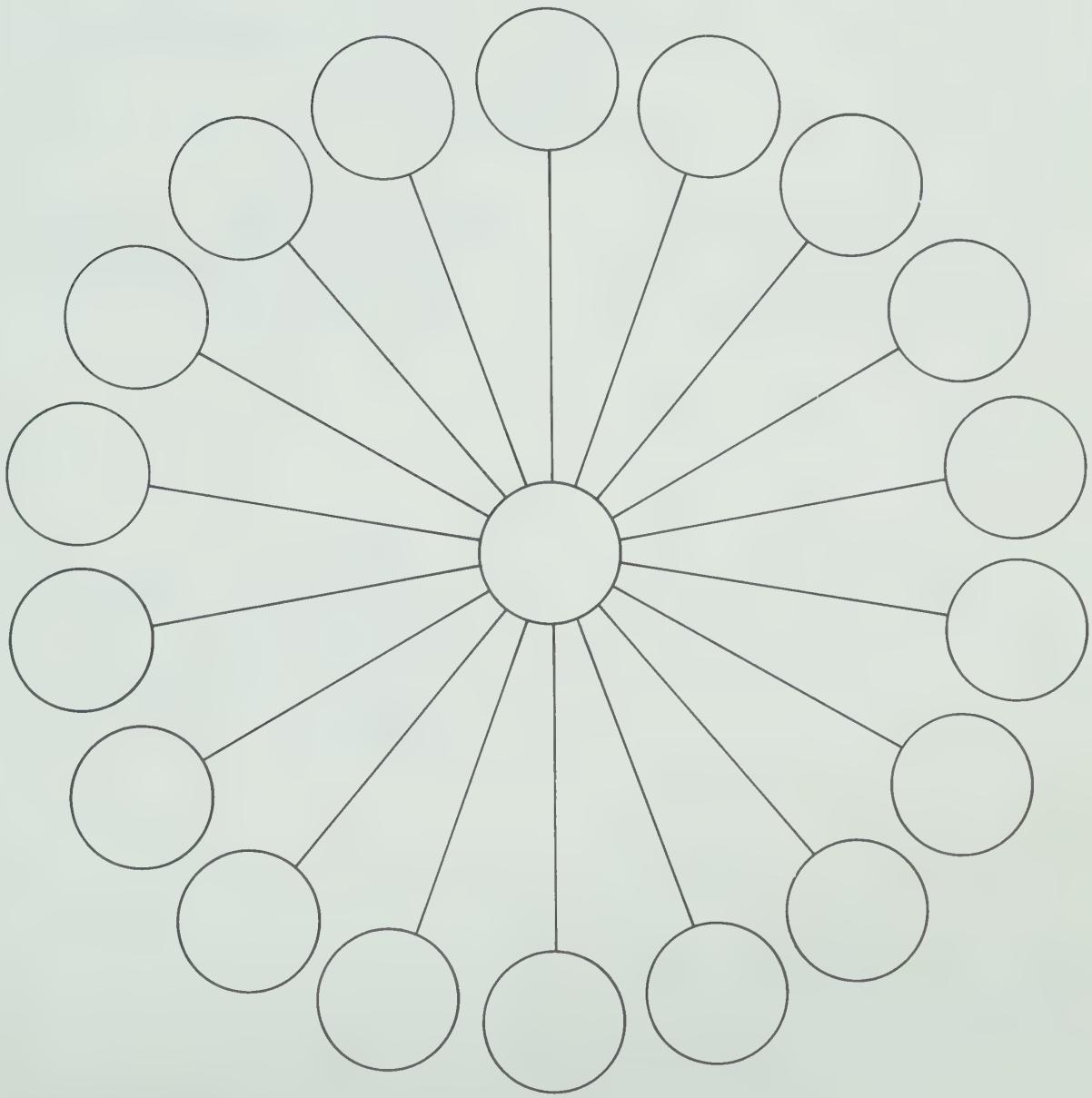
5. Complete the table.

1	**2**	**3**	**5**	**9**	**13**		**17**		**34**
3	**5**	**7**	**11**	**19**		**31**		**49**	

6. You have 3 coins in your pocket—pennies, nickels, or dimes. How much money might you have? Make a table.

Logical Thinking

Put the numerals 1 to 19 in the 19 circles so that the sums of any three numbers in a row are equal.



Choosing the Information Needed

Circus Ticket Prices (in dollars)

Row	1-20	21-40	41-60	61 +
Adult	10.50	8.60	7.50	5.50
Child (under 12)	8.00	6.00	5.00	3.75
Students (12 and over)	1.50 off adult price			

1. Mrs. Brown bought tickets in row 44 for herself, her 13-year-old daughter, and her 10-year-old son. How much were the tickets?

_____

2. Mr. and Mrs. Walter, their 6-year-old twins, and their 8-year-old son have seats in row 27. How much did the tickets cost?

_____

3. A group of 12 high-school students and 2 parents bought tickets in row 18. How much did the tickets cost?

_____

4. Mr. and Mrs. Costa are taking their daughter Jane and 3 of her classmates to the circus. It is a party for Jane's ninth birthday. They have seats in row 44. How much did they pay?

_____

5. Make up a problem of your own and solve it.

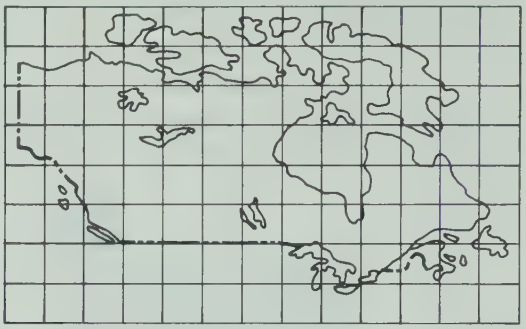
Working with Models

A shape made of five squares like this is a **pentomino.**

Draw as many different pentominos as you can.
The two above are the same.

Scale Drawing

Enlarge the drawing here onto the grid below.

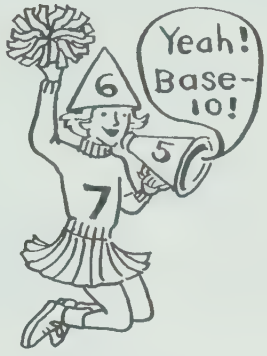


What is the ratio of the area of the large drawing to the small drawing? _____

Number Systems

Our number system is a **base-ten** system.

A base-ten place-value chart looks like this.



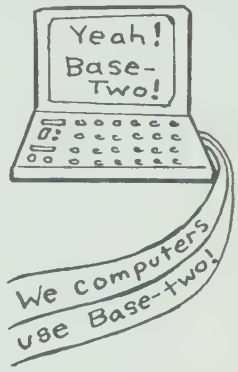
$10 \times 10 \times 10$ thousands	10×10 hundreds	10 tens	1 ones
		1	1
	1	1	0

11 means 1 ten + 1 one
or 10 + 1 = 11

110 means
1 hundred + 1 ten + 0 ones
or 100 + 10 + 0 = 110

The binary system is a **base-two** system.

A base-two place-value chart looks like this.



$2 \times 2 \times 2$ eights	2×2 fours	2 twos	1 ones
		1	1
	1	1	0

11 means 1 two + 1 one
or 2 + 1 = 3

110 means
1 four + 1 two + 0 ones
or 4 + 2 + 0 = 6

What do these binary numbers equal in our base-ten system?

Binary Place-Value					
eights	fours	twos	ones		Number in Our Base-Ten System
			1	=	
		1	0	=	
		1	1	=	
	1	0	0	=	
	1	0	1	=	
	1	1	0	=	
	1	1	1	=	
1	0	0	0	=	
1	0	0	1	=	
1	0	1	0	=	

Number Games

Arrange the given digits to make numbers that have the **greatest** possible sum or difference.

1. 1, 2, 3, 4, 5, 6

2. 9, 8, 7, 6, 4, 2, 1, 0

3. 8, 8, 7, 7, 5, 4, 3, 0

4. 8, 5, 4, 2, 1, 1, 0, 0

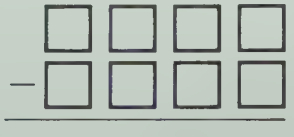
Arrange the given digits to make numbers that have the **smallest** possible sum or difference.

5. 1, 2, 3, 4, 5, 6

6. 9, 8, 7, 6, 4, 2, 1, 0

7. 8, 8, 7, 7, 5, 4, 3, 0

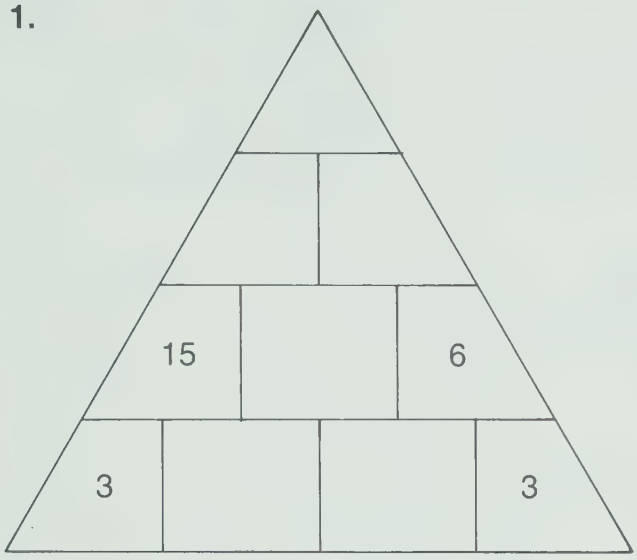
8. 8, 5, 4, 2, 1, 1, 0, 0



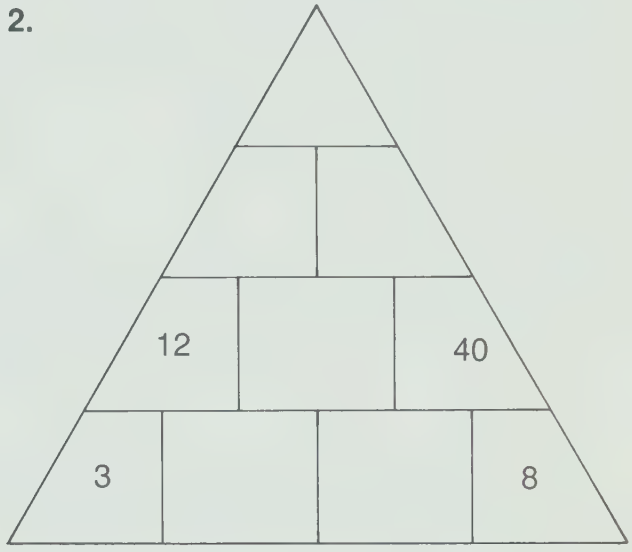
Multiplication Triangles

Complete the triangles. Each number is the product of the two numbers underneath it.

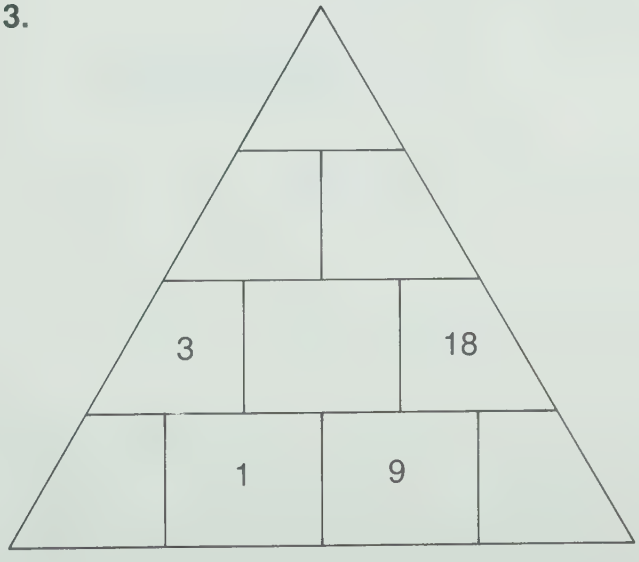
1.



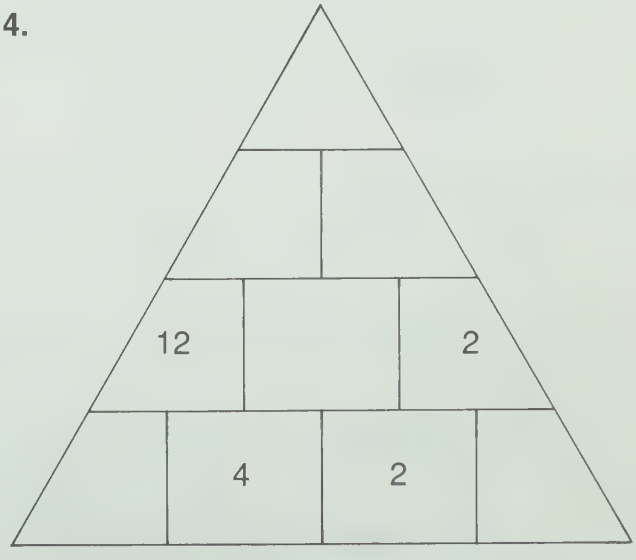
2.



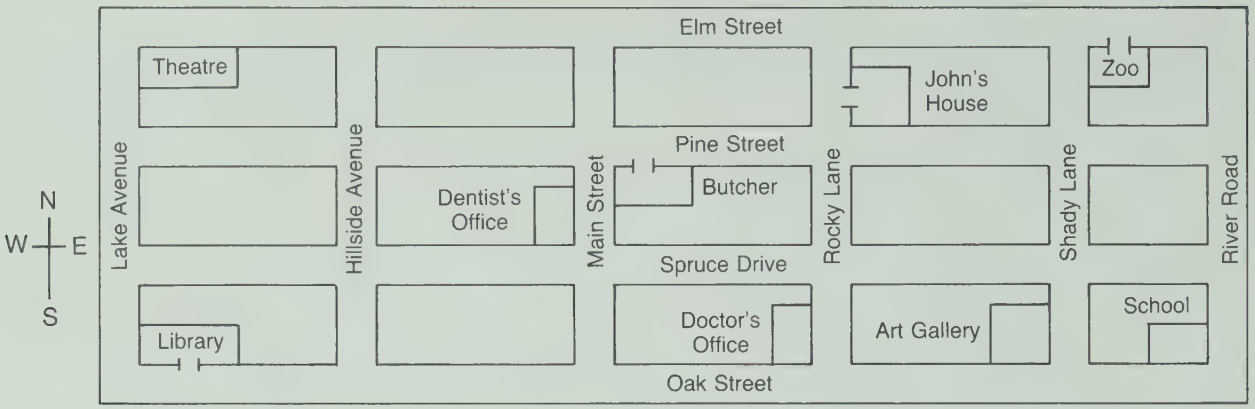
3.



4.



Directions on a Map



Use the street map to answer the questions.

1. Turn left as you leave the zoo. Go to the corner. Then walk 1 block south, 1 block west, and 2 blocks south. Where are you?

_____

2. As you leave the library, turn right. Go to the corner. Walk 2 blocks north. Turn right, walk 3 blocks east, 1 block south, and 1 block west. Where are you?

_____

3. As you leave the butcher shop, turn right. Go to the corner. Walk 1 block south, then 2 blocks east. Turn right and walk 1 block. Then walk west for 1 block. Where are you?

_____

4. As you leave John's house, turn left. Walk 2 blocks south. Then walk east for 2 blocks. Where are you?

_____

5. Write directions for the most direct route to the theatre from John's house.

_____

_____

6. Write directions for the most direct route from the library to the zoo.

_____

_____

Division Logic

Solve.

There are fewer than 15 marbles in the bag.

When 5 children divide them evenly, 3 marbles are left over.

When 3 children divide them evenly, 1 marble is left over.

How many marbles are in the bag?

____

There are fewer than 30 marbles in this bag.

When 4 children divide them evenly, 3 marbles are left over.

When 5 children divide them evenly, 3 marbles are left over.

How many marbles are in the bag?

____

There are fewer than 50 apples in this basket.

When 9 children divide them equally, 1 apple is left over.

When 8 children divide them equally, 6 apples are left over.

How many apples are in the basket?

____

There are fewer than 50 apples in this basket.

When 6 children divide them equally, 1 apple is left over.

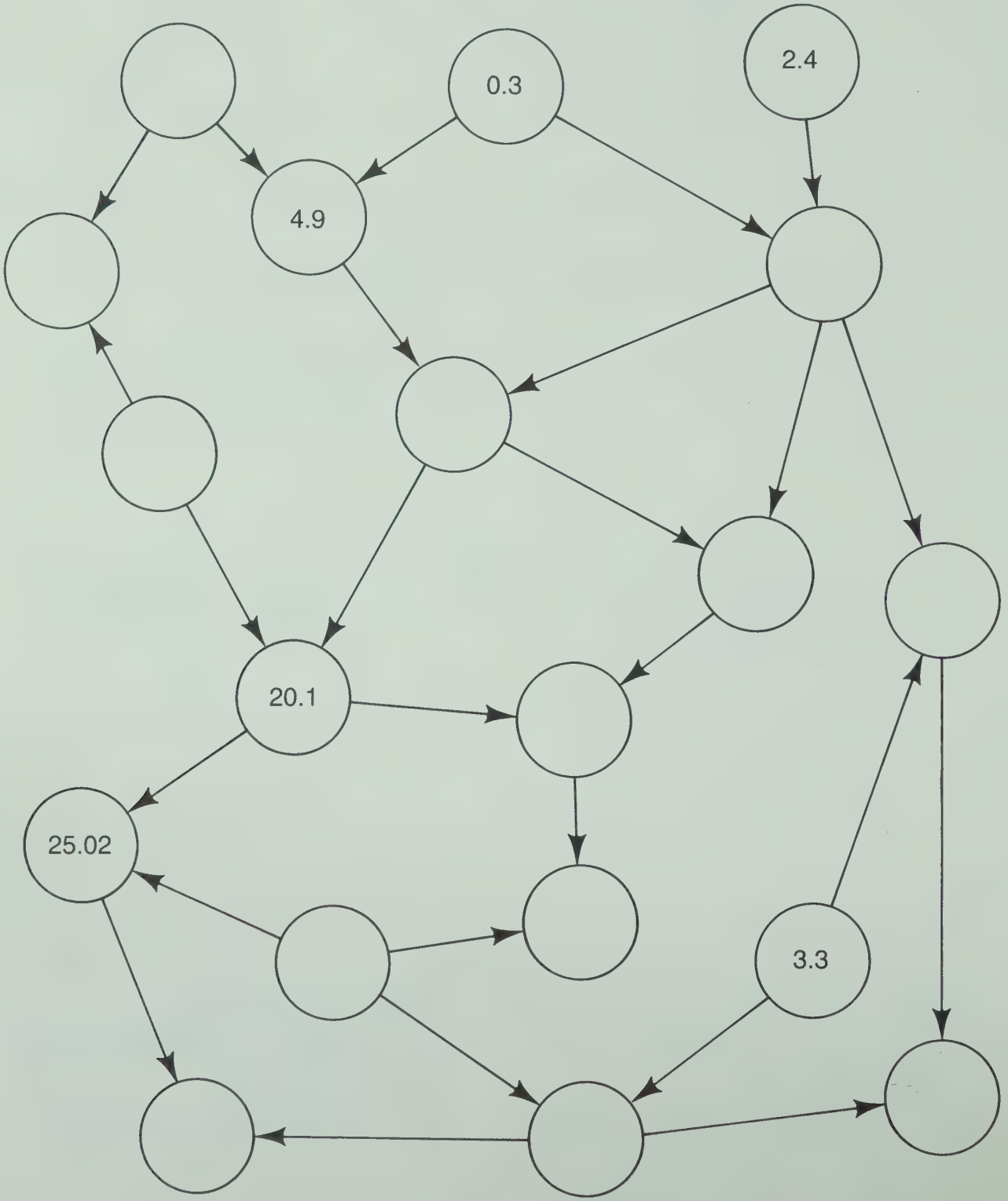
When 7 children divide them equally, 2 apples are left over.

How many apples are in the basket?

____

Decimal Puzzle

Complete the puzzle. Add the two numbers in the circles whose arrows point to the same empty circle. Hint: Sometimes you are given the sum and must subtract to find one of the addends.



Area and Perimeter

Each square is one square centimetre.

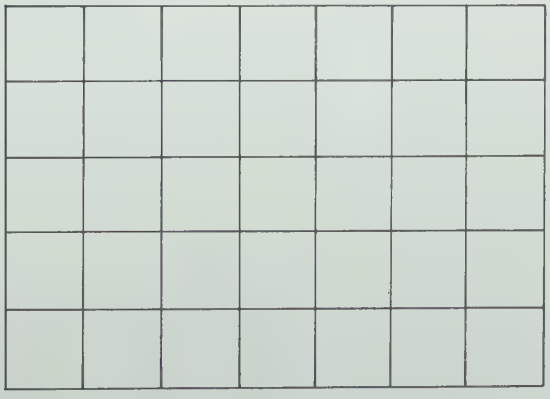
Draw a square with a perimeter of 12 cm.

Draw a rectangle with a perimeter of 12 cm and an area of 8 cm^2.

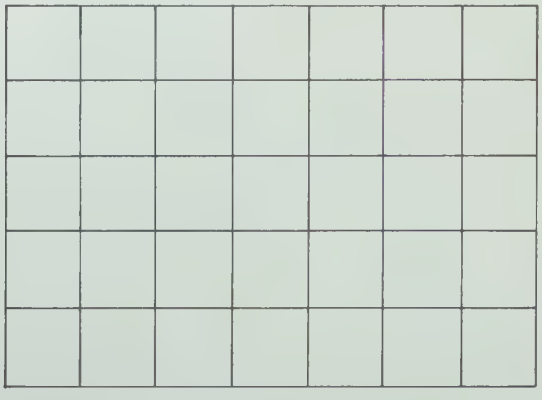
Draw a rectangle with a perimeter of 10 cm and an area of 6 cm^2.

Draw a rectangle with an area of 18 cm^2. One side must be twice as long as the other side.

Draw a rectangle with a perimeter of 22 cm. One side must be 3 cm longer than the other.

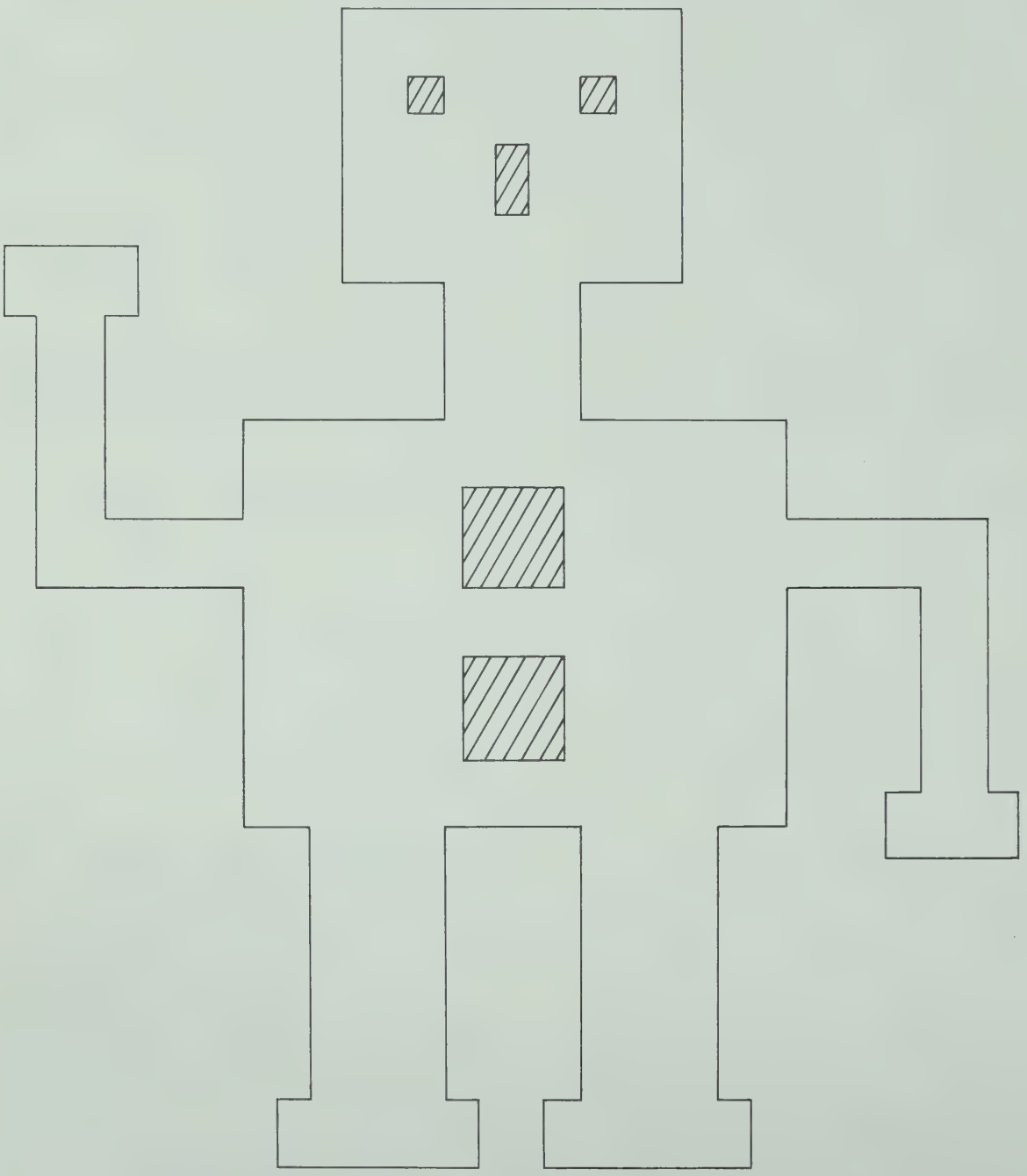


Draw a rectangle with an area of 12 cm^2 and a perimeter of 14 cm.



Measurement and Area

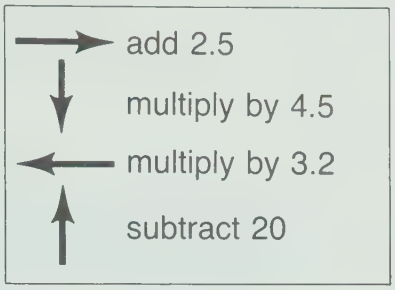
Use a centimetre ruler to measure the length of each part of the robot. Then, find the total area of the unshaded part of the robot.



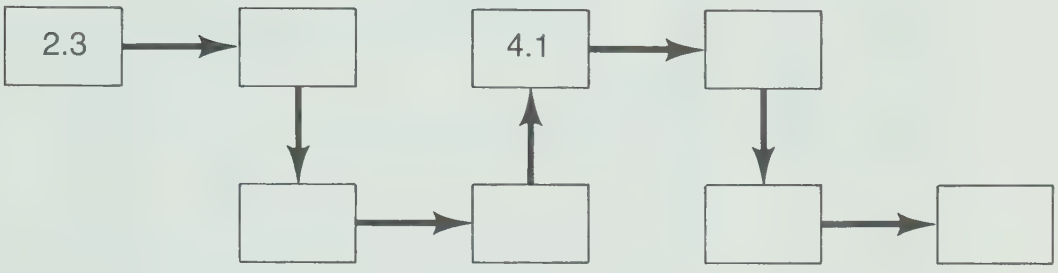
The total area of the unshaded part of the robot is _____ .

Arithmetic Puzzles

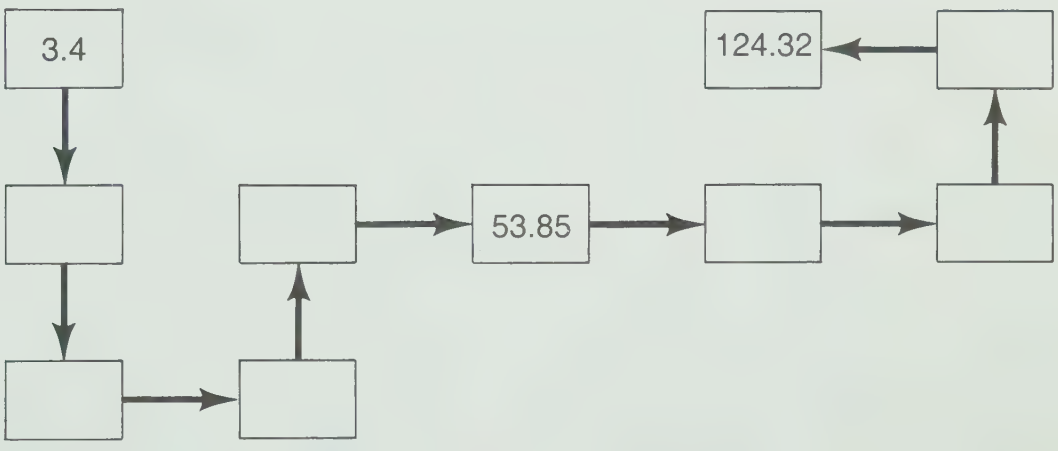
Complete the puzzles.
Follow the directions
shown by the arrows.



1.



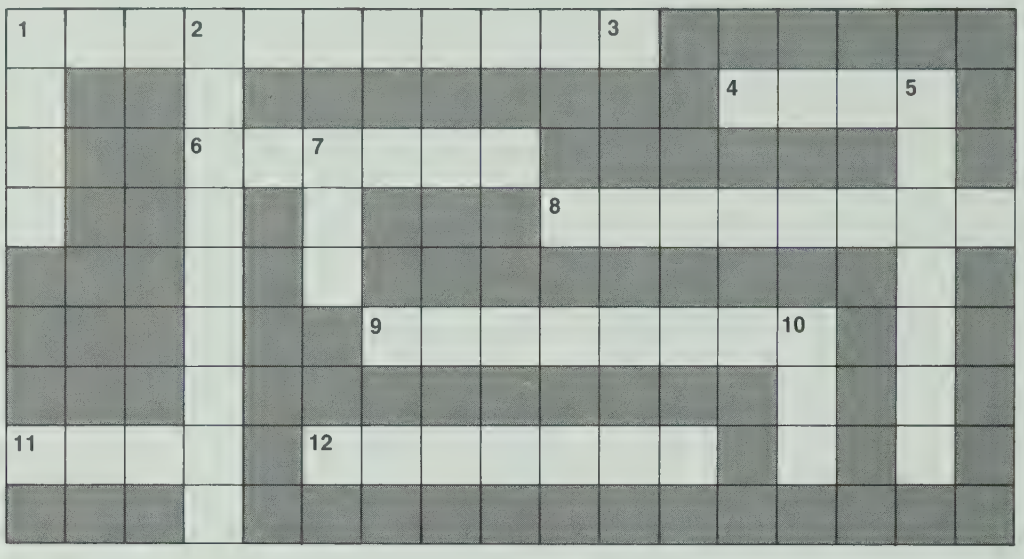
2.



3.

Geometry Crossword Puzzle

Complete the crossword puzzle.



Across

1. a triangle with 3 sides the same length
4. number of sides in a quadrilateral
6. an angle that measures more than 90° but less than 180°
8. a polygon with 5 sides
9. this shape
11. a prism whose six faces are squares
12. a triangular ———

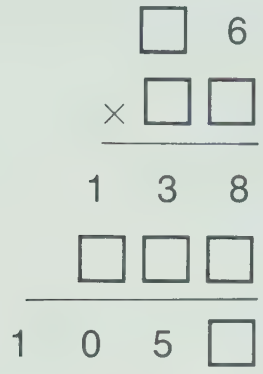
Down

1. the line segment where two faces of a solid meet
2. a triangle with 2 sides the same length
3. a set of points that continue in 2 directions without end
5. a parallelogram with all 4 sides equal in length
7. number of lines of symmetry in this figure
10. this figure

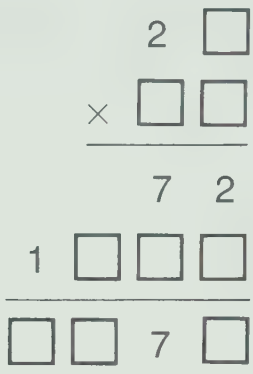
Missing Digits

Write the correct digit in each box to complete the problems.

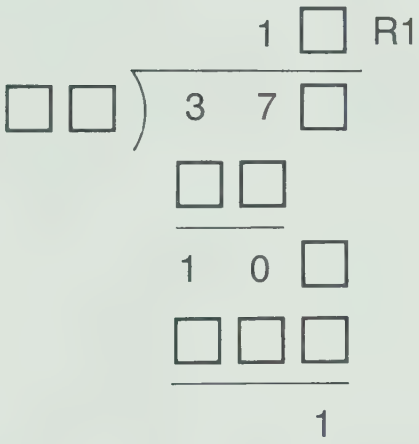
1.



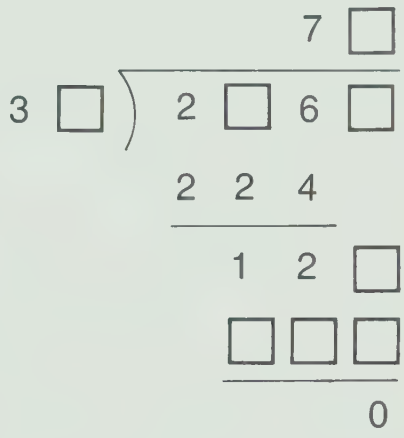
2.



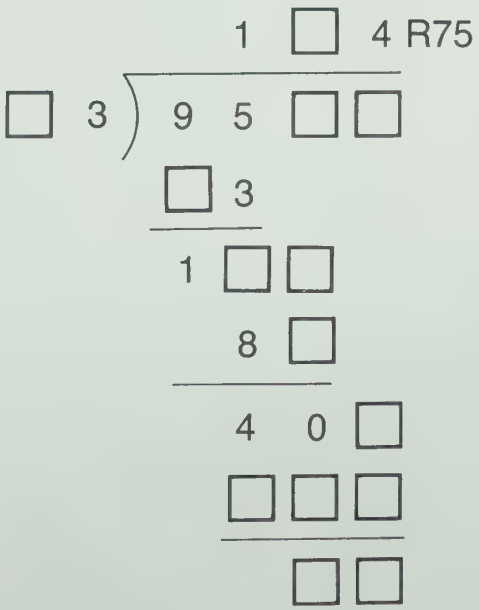
3.



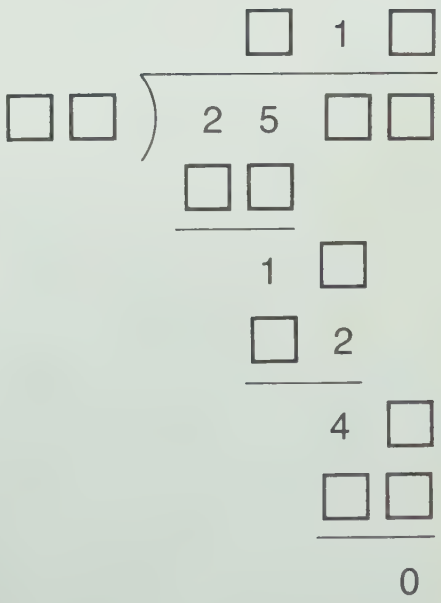
4.



5.



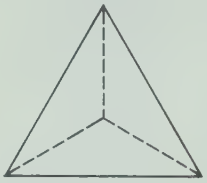
6.



Polyhedron

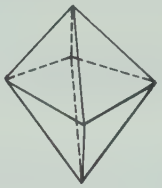
A regular polyhedron is a solid with faces in the shape of regular polygons. All the faces are congruent.

The simplest regular polyhedron is the regular tetrahedron.



It has 4 equilateral triangles for faces.

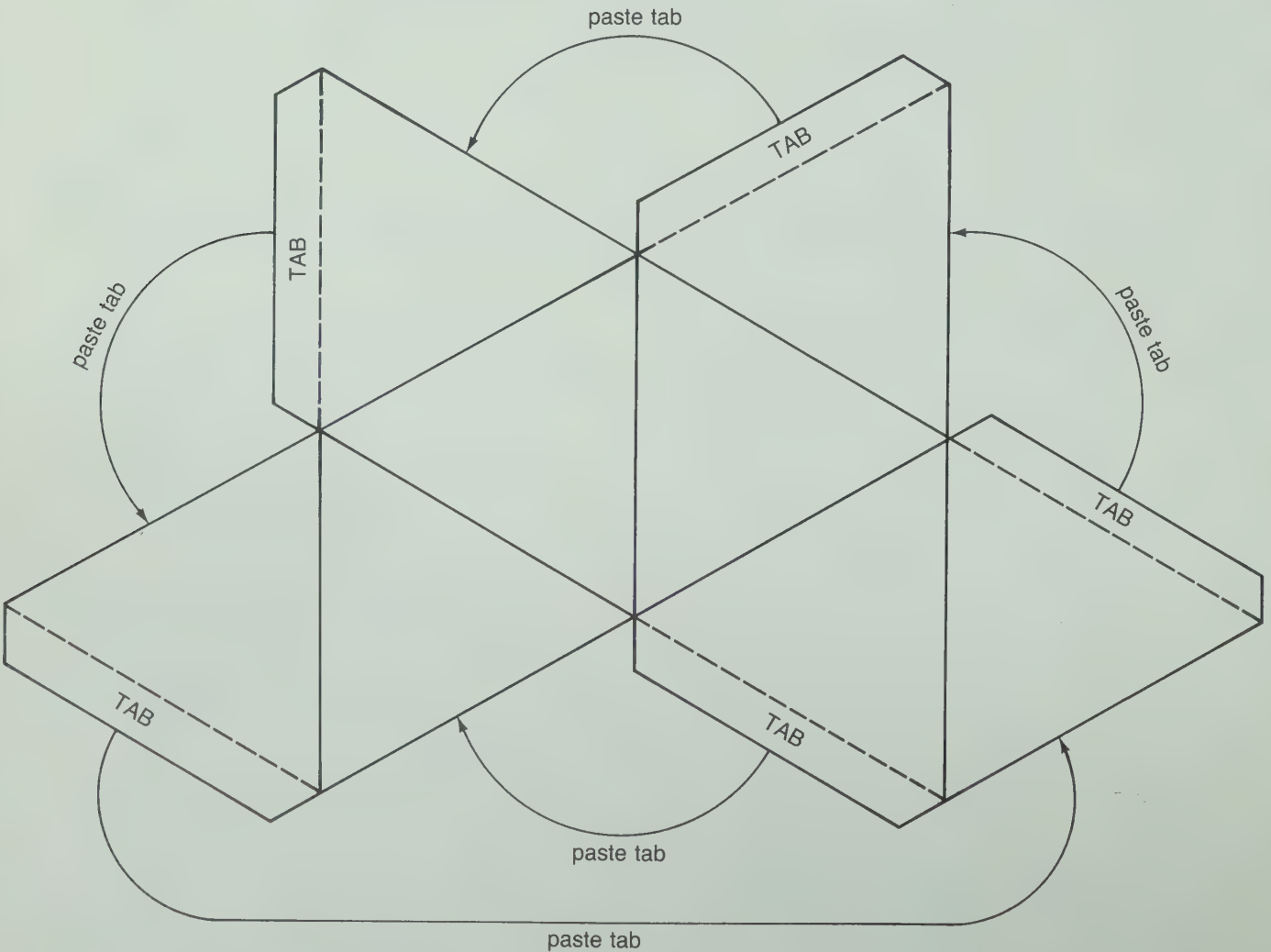
Another polyhedron is the regular octahedron.



It has 8 equilateral triangles for faces.

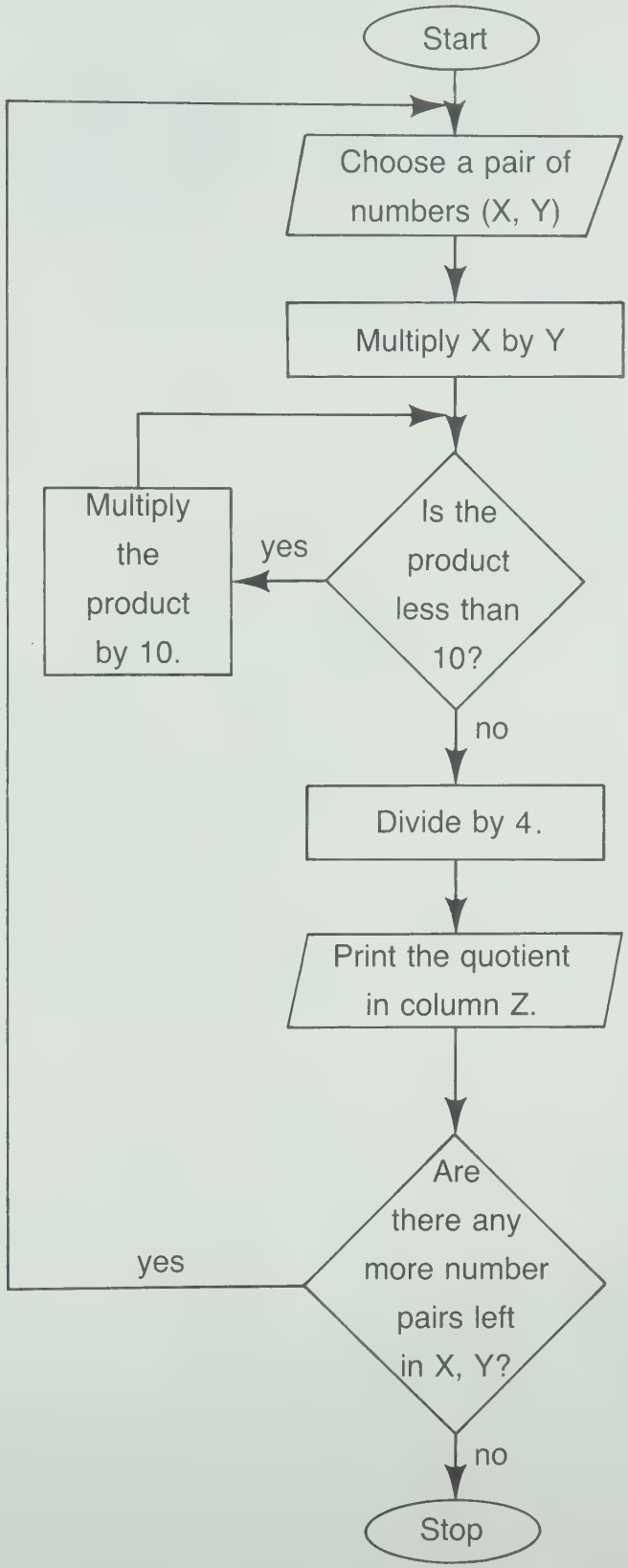
Follow the directions to make a regular octahedron.

Cut out the pattern. Fold on all the solid and dotted lines.
Then, glue or tape each flap to the adjoining edge as shown.



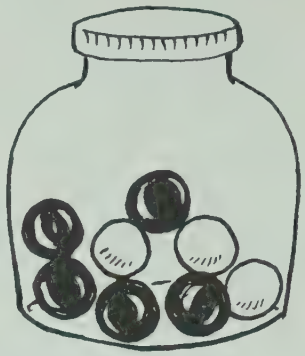
Decimal Flow Chart

Fill in column Z by following the flow chart.



X	Y	Z
2	5	
0.02	0.05	
3	4	
0.3	0.4	
4	5	
0.04	0.05	
5	6	
0.5	0.6	

Probability



There are 8 marbles in this jar.

5 of them are red.
3 of them are white.

You must choose a marble without looking.

The **probability** that you will pick a red marble is 5 out of 8, or $\frac{5}{8}$.

The **probability** that you will pick a white marble is 3 out of 8, or $\frac{3}{8}$.

Find the probability for each event. Write each answer as a fraction.

John has 10 socks in his drawer. 6 of them are gray. 4 of them are white. He picks a sock without looking.

1. What is the probability John picks a gray sock? _____

2. What is the probability John picks a white sock? _____

3. What is the probability John picks a red sock? _____

Lisa has 9 socks in her drawer. Some of them are red. The rest are blue. If Lisa picks one sock without looking, the probability of its being a red sock is $\frac{4}{9}$.

4. How many red socks are in Lisa's drawer? _____

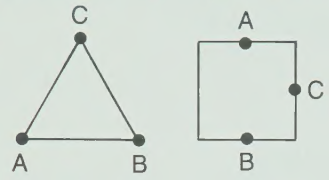
5. How many blue socks are in Lisa's drawer? _____

Topology

Topology is a branch of mathematics that deals with the stretching and bending of figures.

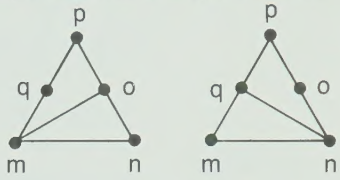
Shapes are topologically equivalent if they can be stretched or molded into the same shape without changing the order of the points or disconnecting any points in the figure.

These two shapes are topologically equivalent.



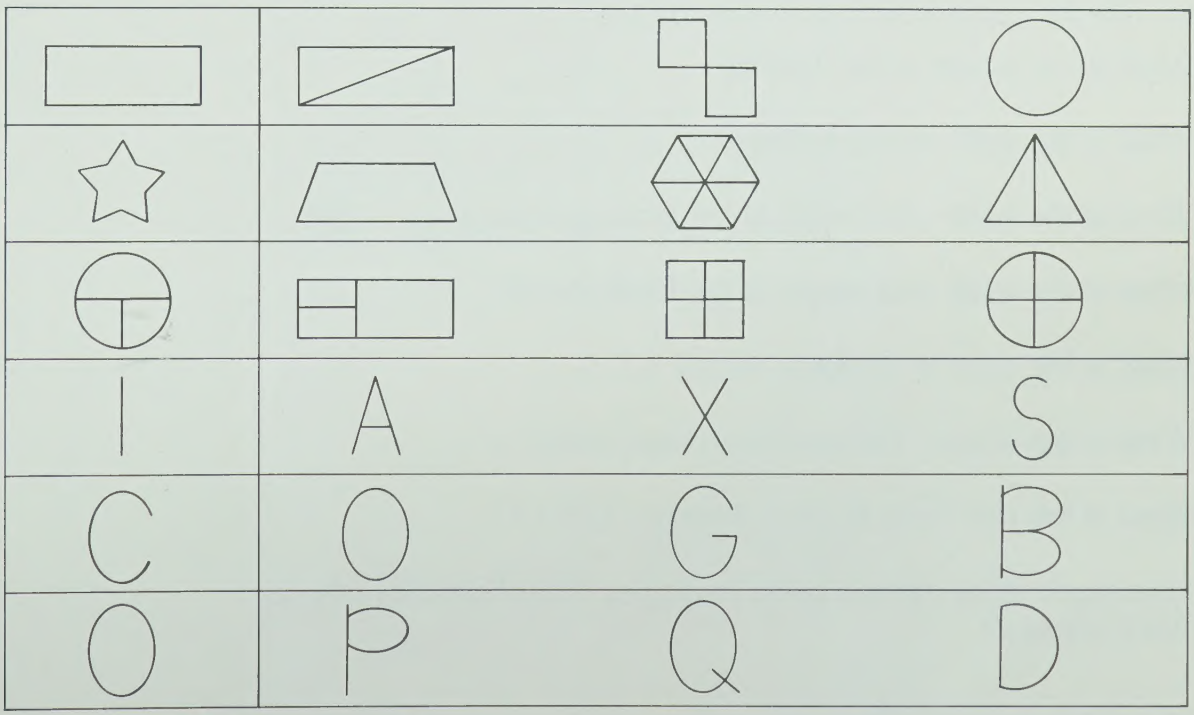
The first figure can be stretched into the second figure without changing the order of the points.

These two shapes are not topologically equivalent.



In the second figure, points m and o are no longer connected.

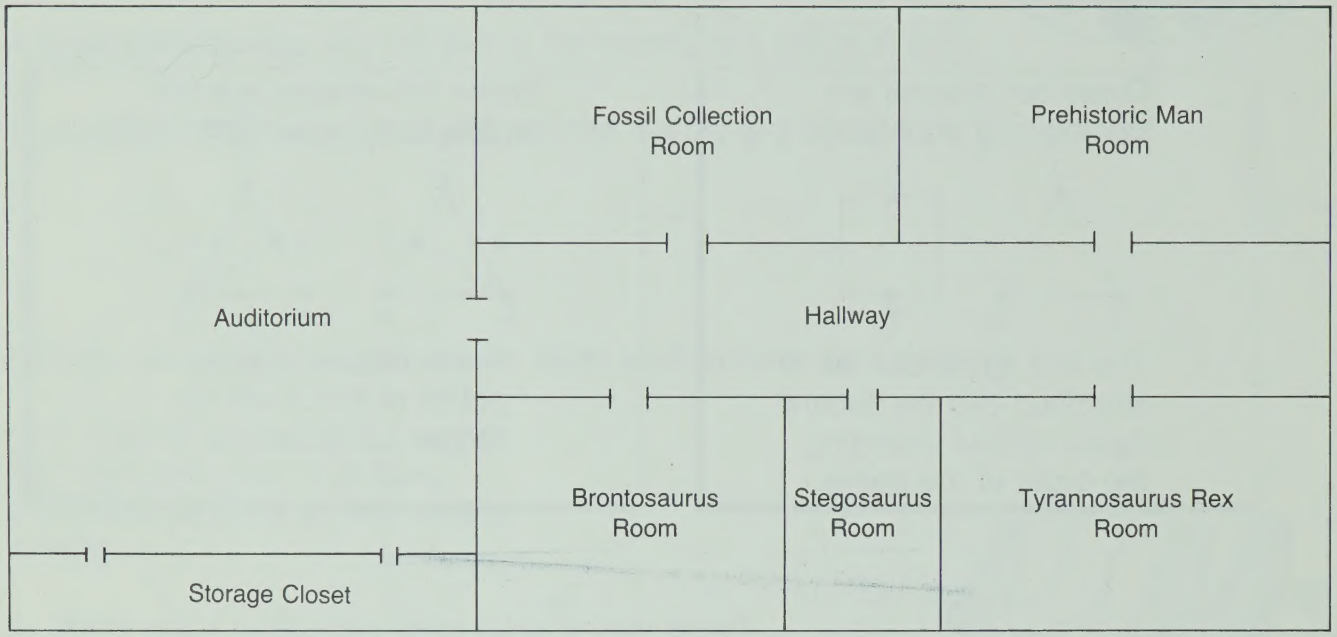
Circle the figure that is topologically equivalent to the first figure in each row.



Scale Drawing

This is a **scale drawing** of one floor of a museum.
The scale is 1 cm to 4 m.
1 cm in the drawing means 4 m in the actual room.

SCALE: 1 cm = 4 m



Use a centimetre ruler to measure the rooms in the scale drawing.
Then, use the scale to answer the questions.

1. What is the length of the hallway? _____

2. What is the width of the auditorium? _____

3. What is the width and length of the storage closet? _____

4. What is the width and length of the fossil room? _____

5. What is the area of the fossil room? _____

6. What is the area of the prehistoric man room? _____

7. What is the total area of the 3 dinosaur rooms? _____

8. How much more room is given to display Tyrannosaurus than to Brontosaurus?

_____

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